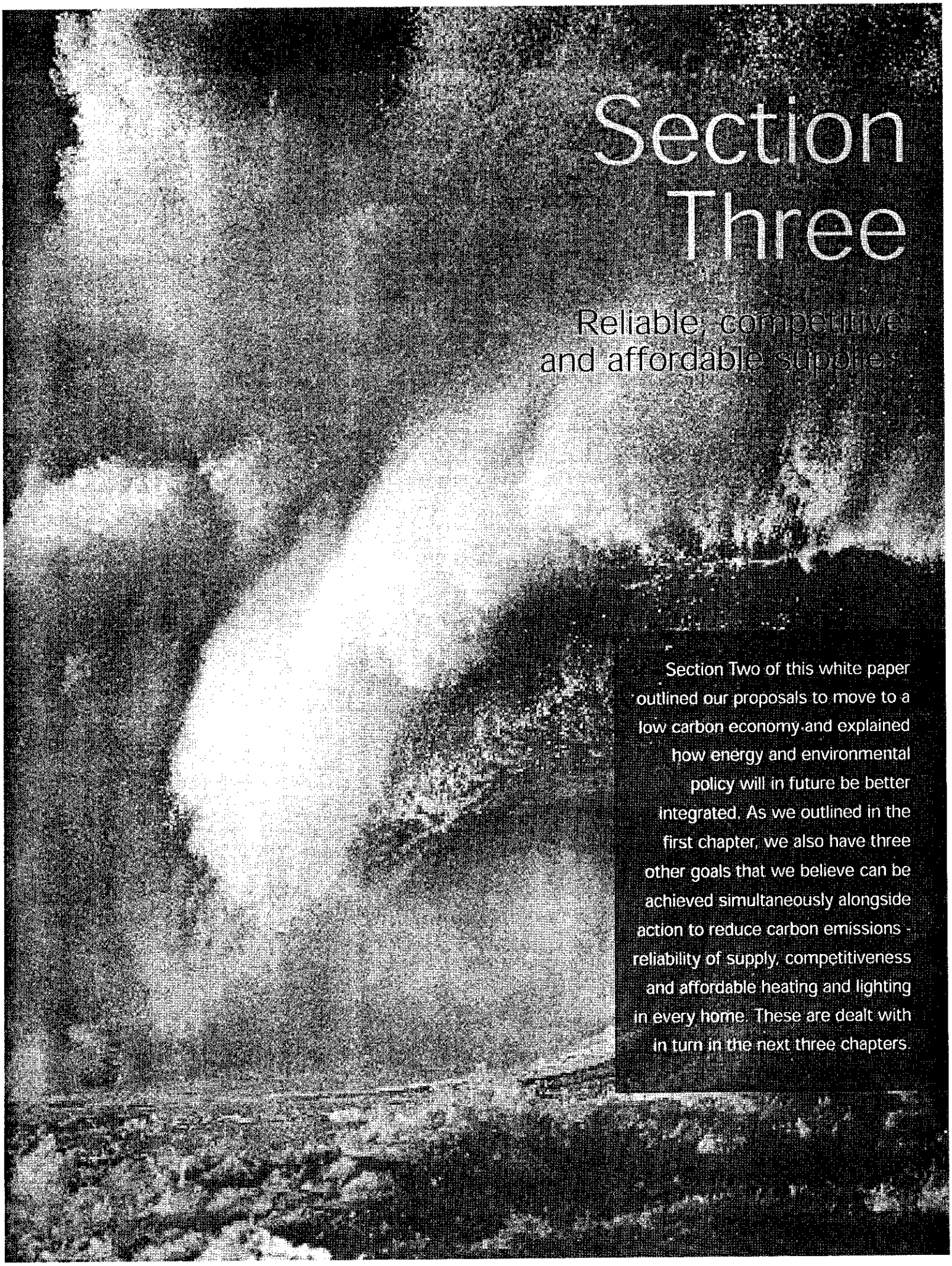


Section Three

Reliable, competitive and affordable supplies

Section Two of this white paper outlined our proposals to move to a low carbon economy and explained how energy and environmental policy will in future be better integrated. As we outlined in the first chapter, we also have three other goals that we believe can be achieved simultaneously alongside action to reduce carbon emissions - reliability of supply, competitiveness and affordable heating and lighting in every home. These are dealt with in turn in the next three chapters.

Chapter 6 Energy reliability

6.1 Our goal is that people and businesses can rely on secure supplies of energy - gas, fuel and electricity - at predictable prices delivered through the market. Reliable energy supplies are an essential element of sustainable development.

6.2 To achieve this we need a resilient energy system, without significant weaknesses, which works well and which recovers quickly if problems occur. This means a diverse system based on a mix of fuel types, a variety of supply routes, efficient international markets, back-up facilities such as storage, and a robust infrastructure. Developing low carbon options will also create opportunities further to increase energy reliability[1].

6.3 Reducing demand also helps energy reliability. Demand can be reduced through better energy efficiency (as described in chapter 3). Technologies and pricing structures that enable and encourage users to manage their electricity and gas demands away from peak periods also help. Reliability can also be enhanced by decreasing our dependency on imported fossil fuels, eg by investing in technologies which will enable us to diversify our fuel options.

6.4 Energy reliability raises issues on a number of time horizons. We need short-term contingency plans against the possibility of geopolitical instability, terrorism, major technical problems and extreme weather conditions. The UK energy system has proved robust. But we cannot at anything like a reasonable cost completely eliminate all risks of supply disruption, for example during extreme weather conditions. We also need long-term strategies to secure sufficiently diverse fossil fuel sources as the UK becomes, over the next two decades, a net energy importer rather than exporter. And we need to rise to even longer-term challenges in reconciling the use of energy with long-term environmental objectives, both domestically and overseas.

6.5 In preparing this white paper, we have considered these issues carefully. The energy supply risks that we face are important. But we believe they are manageable. Our new arrangements for monitoring energy security have given us better information on risks and opportunities and on the markets' response to them. Energy markets are already responding[2]. Our role is continually to monitor developments, and to create a competitive market place, including through good international relations, within which liberalised markets will deliver energy reliability.

6.6 Our strategy is based on the following principles:

- the regulatory framework must give high priority to reliability. OFGEM and the Government both have duties to secure that all reasonable demands for electricity and gas are met. **OFGEM has agreed that in future it will report on how its regulatory activities impact on energy security;**
- diverse sources, fuel types and trading routes should be promoted to avoid the UK being reliant on too few international sources of oil and gas. **We will work with producer nations and the private sector to promote the conditions needed for investment in energy infrastructure;**

1 The term energy reliability is taken to encompass all aspects of energy security; the words reliability and security are used interchangeably in this chapter.

2 For example, in the past year contracts have been signed, or definite interest expressed, for additional gas supplies and new infrastructure projects. These are diverse and include Centrica contracting with Statoil and Gasunie to import natural gas, Exxon -Mobil with Qatar for LNG, increased compression on the interconnector at Zeebrugge, and proposals for new LNG terminals at Isle of Grain and Milford Haven.

- liberalised energy markets are a cornerstone of our energy policy. Competitive markets incentivise suppliers to achieve reliability. For example, suppliers will diversify their own sources to reduce their commercial risks, thus contributing to wider diversity. **We will continue to work to create an effective policy and regulatory framework for the market, both nationally and at European and international levels;** and
- we need robust information on supply and demand and market responses to it. **We will therefore give high priority to our new monitoring arrangements to track all aspects of energy reliability.**

6.7 For the markets to work, firms need to be confident that the Government will allow them to work. Energy supply problems in other countries have demonstrated the risks of not doing so. **We will not intervene in the market except in extreme circumstances, such as to avert, as a last resort, a potentially serious risk to safety.**

6.8 Our perception and understanding of terrorist threats changed on 11 September 2001. Since then we have improved and will continue to improve our contingency planning and resilience in dealing with major incidents. This applies especially to the energy sector, which along with other areas of our critical infrastructure is vital to the every day needs of industry and the public alike. Measures outlined elsewhere in the white paper to promote distributed generation and renewables will add to the diversity and robustness of the energy system.

Short-term reliability issues...

6.9 Energy security is a shared responsibility. OFGEM and the Government have duties, in carrying out their primary function of protecting the interests of consumers, to secure that all reasonable demands for electricity[3] are met and to secure a diverse and viable long-term energy supply. OFGEM does so through for example setting licence conditions on industry participants and the price reviews of the monopoly infrastructure providers. The aim is that, should energy supplies be disrupted or energy demand exceed expectations in the short-term, the problem could be swiftly resolved.

Meeting peak gas demand

On 7 January 2003 GB gas demand reached a new record high of around 5 million MWh (450 million cubic meters). This level of demand is 5% higher than the previous maximum in 2002 but still only represents 85% of the potential peak day demand (a demand that is expected in 1 year in 20) that Transco has to ensure that the gas network can cope with.

6.10 Energy consumers, the market and Government need reassurance that the regulator is giving sufficient weight to energy security in proposing or making new regulations. OFGEM has agreed that in future its consultation documents will explain how its proposals will affect energy security as well as their impact on the environment and our social objectives.

3 For gas: the need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met.

6.11 Where short-term problems arise we will continue, where appropriate with OFGEM, to evaluate what has happened and act accordingly. For example:

- the storms of 27 October 2002 were severe in some parts of the country and many households were without electricity for over a week. We considered the response of some of the electricity companies inadequate and immediately launched an investigation by engineering consultants into the resilience of the networks themselves and the response by the companies to the emergency. The report[4], published in December 2002, confirmed that those companies which had carried out effective network maintenance and which had anticipated the storms well suffered fewer incidents and reconnected customers more quickly. We are considering along with OFGEM and the industry the best means of ensuring that the recommendations made in the report are implemented; and
- following the fuel protests in September 2000 we signed a Memorandum of Understanding with oil industry companies, the police, the Trades Union Congress, the Cabinet of the National Assembly for Wales and the Scottish Executive which sets a framework to improve co-operation and co-ordination between the key organisations in the event of a threat to oil supplies. We are now reviewing with the industry and other stakeholders the detailed plans for tackling oil emergencies and updating them in the light of developments in the economy.

Long-term challenges...

6.12 We have analysed closely the issues relating to future energy reliability. This analysis broadly supports that of the PIU which led to the conclusion that increased dependence on gas was not of itself a pressing problem. But safe and reliable supplies of electricity and gas are fundamental to our economy and way of life. We must therefore constantly monitor developments.

6.13 As a country we have been a net exporter of energy, with significant imports and exports, for the past two decades following the successful development of North Sea oil and gas. But this will change. Forecasts vary but it is commonly agreed that UK oil and gas production will decline significantly over coming years. We are currently working with the industry[5] to maximise the economic potential of our North Sea supplies (see paragraph 6.37). But it is still likely that the UK will become a net importer of gas on an annual basis by around 2006 and of oil by around 2010. By 2020 we are likely to be importing around three-quarters of our primary energy needs. And by that time half the world's gas and oil will be coming from countries that are currently perceived as relatively unstable, either in political or economic terms.

6.14 Relying on imports need not be a problem in itself. Oil and - currently to a lesser extent - gas are internationally traded commodities. And all countries, whether import-dependent or not, have a common interest in promoting open markets and predictable prices. Most other advanced industrial economies

4 *Power system emergency post-event investigation* - www.dti.gov.uk/energy/domestic_markets/security_of_supply/index.shtml

already import significant proportions of their energy needs without noticeable disruption. Import dependency has long been a fact of life for all the G7 countries apart from the UK and Canada.

6.15 World wide fossil fuel resources are very large. Oil is the world's most important fuel, accounting for 40% of global primary energy consumption.[6] Its share in 2020 is likely to be at a similar level. Globally, conventional oil reserves are sufficient to meet projected demand for around 30 years[7], although new discoveries will be needed to renew reserves. Together with non-conventional[8] reserves such as oil shales and improvements in technology, there is the potential for oil reserves to last twice as long. Proven gas reserves would meet at least 45 years of demand and there remains vast potential beyond this. That there is no shortage of oil and gas resources globally means that supplies are unlikely to be disrupted for long. But just as today, there will be risks of price shocks resulting from geopolitical disruption or damage to infrastructure in the short-term. These risks need to be monitored and managed.

International risks...

6.16 Moving from being largely self-sufficient to being a net importer of gas and oil requires us to take a longer term strategic international approach to energy reliability. We need continually to monitor and to manage the following international risks, while at the same time deepening international co-operation:

- **insufficiently diverse sources of fossil fuels.** We should avoid becoming reliant on too few international sources of oil and gas; and
- **global anti-competitive practices and illiquid markets.** Competitive and liquid global markets, with oil and gas traded freely are the most effective way to help deliver more stable energy prices and for us to purchase what we need at any time.

We explain in the following paragraphs how we will mitigate these risks.

Diversity in gas markets...

6.17 Norway has been and is likely to remain a key provider of gas to the UK, and the Netherlands may become a more important supplier of gas to Western Europe. The world's largest gas reserves are to be found in Russia, the Middle East and Africa. Russia has the largest gas reserves, with around a third of the world's total[9] and has been exporting gas to Western Europe for over 30 years without interruption. Many other countries offer potential supplies of gas including Algeria, with a long track record dating back to the late 1960s of providing gas to Europe, and countries in the Caspian region, North and West Africa and the Middle East (in particular Iran and Qatar).

6.18 **We are putting in place a new treaty with Norway** to facilitate continued supplies of gas - as a primary fuel and as a source of feedstock for the UK chemical industry - and to simplify cross-border developments, which will enhance the UK's production from the North Sea.

6 *IEA World Energy Outlook 2002*

7 *IEA World Energy Outlook 2002*

8 Oil not produced from underground reservoirs, for example oil shales, oil sands, extra heavy crude, etc.

9 *BP Statistical Review of World Energy*

6.19 Our priority has to be to bring diverse supplies on-stream and into the EU market. Substantial long-term investment is needed to build the necessary infrastructure. For example some estimates[10] suggest that investments of US$170 billion may be required to develop gas production in Russia alone to 2020. While the total sums are large there is already evidence of the market expanding export routes, for example through the development of the North European Pipeline which would provide a much more direct route for Russian gas to the UK. The private sector has an incentive to undertake the necessary investment but given the scale of the infrastructure investments required and the long investment lead times **we will continue to monitor infrastructure development and international gas markets closely and support efforts to encourage investment (e.g. by promoting stable financial regimes and working with IFI's[11] to support project financing)**.

6.20 Companies importing gas into the UK have a strong commercial interest in diversifying their own risks by having supply contracts with a number of different suppliers and by encouraging the development of appropriate infrastructure. The number and diversity of participants in the UK gas market is also making a valuable contribution towards expanding arrangements for future supply of gas into the UK. **To support the creation of an economic environment conducive to investment we will continue to engage with Russia, Iran, the Caspian, Middle East and African countries and the potential transit countries, focusing on good governance and the development of stable investment and transit regimes.**

6.21 Liquefied Natural Gas (LNG) offers a flexible alternative to piped gas. International trade in LNG is growing at about twice the rate of pipeline gas. This may over time lead to greater price convergence between regional markets given the increasing scope for arbitrage. The development of LNG import facilities in the UK will need additional onshore pipelines in some locations. This is being actively considered by Transco. It is possible that gas imports from some sources, particularly LNG, will vary in energy content and may require blending with other gases in the system, special processing on import, or the modification of certain gas appliances. **We will keep developments here closely under review. In particular we will monitor the likely effects on gas quality. In general we welcome the expansion of the LNG market as a contribution to diversity and security and as a source of competition to piped gas.**

6.22 The development of a gas cartel amongst pipeline gas and LNG producers could undermine long-term price security. **We will work with the European Commission and other member states in monitoring the situation closely, maintaining and developing a dialogue with exporting countries, encouraging diversification of gas supplies to Europe and addressing any emerging risks.**

Diversity in oil markets...

6.23 The bulk of world oil reserves are found in the Middle East, with Saudi Arabia alone holding around a quarter.[12] The other major Gulf producers hold as much again. Other significant reserves are found in South and

10 IEA, 2002

11 International Financial Institutions

12 BP Statistical Review of World Energy

Central America, Africa, Russia and the Caspian Basin. In addition to conventional oil reserves there are also massive unconventional oil reserves[13] in Canada and Venezuela. The costs of production have fallen rapidly for these reserves but they remain higher than those of conventional oil. They also tend to be of poorer quality but can be upgraded. **To monitor trends in international oil markets and prepare for risks and uncertainties we will enhance our existing arrangements to monitor oil security issues. This work will be led jointly by the DTI and the FCO.**

6.24 Oil stocks can contribute to resilience in the event of actual or potential supply disruptions. But they are unlikely ever to be large enough to act as a lever on oil prices. The International Energy Agency (IEA) is the key organisation for managing oil supply disruptions and the release of stocks by its members, including countries such as the USA and Japan in addition to EU members. As the proportion of world oil consumed by non-IEA members increases, it will be important for the IEA to establish a dialogue with key consumer countries, such as China and India, on the importance of oil security arrangements, the role of the IEA and how these countries could develop a closer relationship with the IEA. The intention would be that this process would lead to these countries developing an oil security framework that worked alongside, and complemented, that of the IEA. **We will continue to support the work of the IEA in encouraging members and non-members to maintain and develop oil security arrangements for use in the event of oil supply disruptions.**

International Energy Agency (IEA)

The IEA - an OECD forum - plays an important role helping to ensure stable energy markets. Originally formed to oversee its members' oil emergency arrangements (described above), it is now also a policy forum for analysis, sharing best practice and technical collaboration in energy. Its committees review the energy policy of both member and non-member countries and long-term issues such as regulation, security of supply and the environment as well as R&D, technology, oil markets and emergency preparedness.

6.25 Like other importers, our dependence on OPEC[14] for our oil supplies is likely to increase in the long-term. Supplies from other sources such as Russia, the Caspian Basin and West Africa will remain important and will add to diversity in the short and medium term. **We will continue to promote good relations with key existing and new suppliers in the Middle East, Russia, the Caspian and Africa. In particular we will continue to work to increase the transparency, diversity and liquidity of the world oil market and to improve the investment climate in key producing countries.**

Ensuring an effective EU market...

6.26 Oil is an internationally traded commodity. This is not yet true to the same extent for gas. We therefore need to work to ensure the development of liquid international gas markets. Our first priority is to work for fully competitive gas (and electricity) markets

13 See footnote 9

14 Members are: UAE, Venezuela, Saudi Arabia, Kuwait, Iran, Libya, Nigeria, Algeria, Indonesia, and Qatar. Iraq is also a member but remains outside the group's quota agreements, as the country is still under sanctions resulting from the aftermath of the 1990-1991 Gulf War.

within the EU. The energy liberalisation package we instigated, which was agreed by EU energy ministers on 25 November 2002 (subject to co-decision procedure and approval by the European Parliament), is a major step towards this. It includes a commitment to allow industrial and commercial electricity and gas consumers a choice of supplier by 1 July 2004 and all consumers this choice by 1 July 2007.

6.27 The new liberalisation directives require the legal separation of transmission and distribution from production and supply and access to grids and downstream pipelines on published non-discriminatory terms. These structural measures are essential to achieving properly functioning internal EU markets. This will benefit consumers in terms of prices, efficiency, choice and service levels.

6.28 The directives also require member states to establish independent economic regulators - such as OFGEM in Great Britain - with specific duties in relation for example to transmission and distribution access tariffs and the allocation of interconnector capacity to third parties on a transparent and non-discriminatory basis. These steps will make a major contribution to the reliability of our energy supplies in the long term.

6.29 We have been pressing for these changes for a number of years. **We will now work with the Commission and with other member states to make sure the agreement is effectively implemented. We will also continue to press the Commission to tackle competition issues vigorously.**

6.30 In the longer term **we will work within the EU to encourage greater links between the EU market and supplies beyond its borders.** Around 70%[15] of global gas reserves are within economic distance of the EU market. Accessing these resources will increase the diversity and resilience of our own gas supplies.

Encouraging international co-operation...

6.31 Producers and consumers have a common interest in ensuring effective trade in energy products. Both benefit from stable markets that help ensure that supply is sufficient to meet demand and thus contribute to relatively stable global prices.

6.32 For over a decade oil and gas producing and consuming countries have been engaged in dialogue on both a bilateral and - through the International Energy Forum - on a multilateral basis. The UK has been an active supporter and participant. The dialogue has helped improve mutual understanding, confidence and awareness of long-term common interests as well as promoting the development of specific initiatives such as the Oil Data Transparency exercise. As trade in energy increases and the interdependence between new and existing oil and gas producer and consumer countries deepens, such dialogue will become more and more important.

6.33 Sustainable energy solutions also have the potential to strengthen energy reliability worldwide. **We will work to promote the deployment of renewable sources of energy in developing countries** (as covered in chapter 4) **as well as encouraging investment in appropriate energy infrastructure.**

15 *BP Statistical Review of World Energy*. Based on proven reserves in countries currently exporting gas to the EU.

6.34 Across departmental boundaries we need to give greater prominence to strategic energy issues in foreign policy. Both in the UK and through its network of overseas posts **the FCO will work more closely with other government departments to achieve common objectives in international energy security**. Our aims are to maintain strong relations with exporting countries and to promote the benefits - to both producers and consumers - of transparent, liquid, and liberalised world energy markets and diverse supplies of energy. In promoting diversity we will also work to minimise the risk of disruption to supplies from regional disputes or local instability and to promote sustainable approaches to energy reliability issues.

6.35 **To this end, we will continue to work with consumers and producers and with the international community to:**

- promote regional stability and economic reform in key producing areas;
- improve mutual understanding and the functioning of world energy markets, for example through continued improvements to international data transparency;
- promote conditions for Foreign Direct Investment through stable financial regimes, transparent legal frameworks, predictable domestic energy policies and predictable foreign investment terms;
- promote liberalisation of energy markets including through the World Trade Organisation (WTO), the IEA and the Energy Charter Treaty;
- work with other large consumers such as China and India to encourage more effective management of energy demand through energy efficiency improvements;
- work with IFIs to support financing for energy infrastructure investment;
- work with OECD partners and the international oil companies to promote sound economic development, particularly among the emerging oil and gas producers in Africa and Central Asia, for example through the Extractive Industries Transparency Initiative multi-stakeholder coalition; and
- through the FCO develop an Environment Attachés network to follow up on the Kyoto Protocol and other sustainable policies, extend the Science and Technology Attaché network, and engage key posts in promoting UK policies and reporting developments relevant to the international oil and gas markets.

Domestic issues...

6.36 In addition to the international risks there are potential risks to energy reliability within the structure of our own market. These are that:

- the economic potential of our oil and gas reserves is not maximised;
- electricity generation companies will not invest in new capacity in sufficient time to meet future needs;
- our sources of electricity generation may become insufficiently diverse;
- supplies, particularly in gas markets, may not be sufficiently diverse and flexible; and
- potential short term disruption may arise from financial difficulties among network operators.

We examine each of these risks in turn below.

The UK energy industry

The UK is home to a number of world class energy companies and companies specialising in all aspects of the energy sector. The UK has expertise ranging from niche extraction techniques and offshore engineering, to cutting edge renewable energy and environmental protection technologies.

We greatly value the contribution that these companies make to the UK economy and to our wider international goals. We will work with our companies to ensure that their international investments continue to make important contributions to economic development, good governance and political stability in key producer states.

We will also continue to work with the industry (for example within PILOT - see below) to maintain the UK's energy networks and to manage the UK's domestic resources to maximise economic and security of supply benefits.

PILOT

Now in its third year, the PILOT initiative is promoting industry co-operation with Government to enhance recovery of the UK's oil and gas resources and so prolong indigenous supplies.

PILOT's specific vision targets for 2010 are to:

- prolong self-sufficiency in oil and gas for the UK;
- maintain production levels of 3 million barrels of oil equivalent per day;
- sustain investment levels of £3 billion per year;
- deliver a 50% increase in the value of industry-related exports by 2005 (from 1999 level);
- bring additional revenue of £1 billion from new businesses;
- sustain 100,000 more jobs than there would have been; and
- ensure that the UK is the safest place to work in the worldwide oil and gas industry.

Specific activities to maximise recovery include stimulation of activity through the review of fallow acreage and fallow developments, promoting trading assets between operators, co-operative work to enhance brownfield developments and the promotion and sharing of best practice.

Maximising our oil and gas reserves...

6.37 We are committed to maintaining an active and successful oil and gas industry in the UK, and to promoting future development of the nation's oil and gas reserves. The sector is and will remain important to the wider UK economy in terms of jobs, investment and its contribution to national income. We are keen to continue to encourage investment in both existing and new fields. The PILOT initiative is central to this aim.

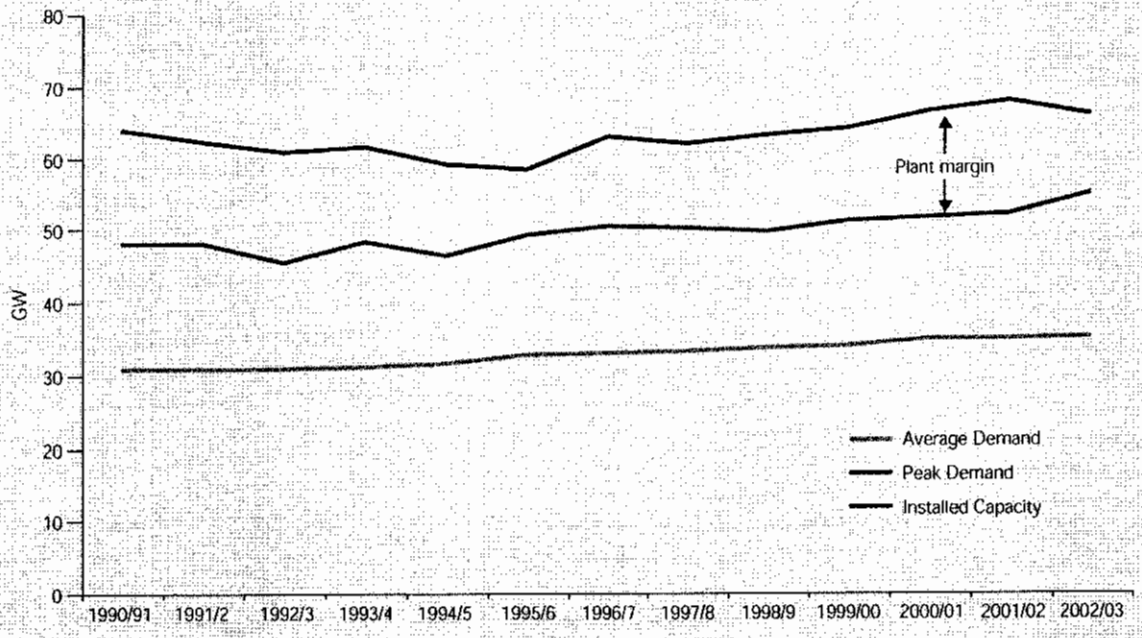
6.38 The 2002 Finance Act introduced important changes to the UKCS fiscal regime. It put in place a stable regime for the future which will raise a fair share of revenue on North Sea producers' profits while promoting long-term investment. The balanced package - the introduction of 100% investment allowances and a 10% supplementary charge on oil production profits on 17 April 2002 and the abolition of royalty on older fields from 1 January 2003 - puts the fiscal regime on a sustainable, long-term basis. New fields now enjoy one of the most favourable tax regimes

amongst major oil producing countries, along with all the other advantages of political stability, open and competitive markets, access to a skilled workforce and an extensive oil and gas infrastructure.

Ensuring incentives to invest in electricity generation...

6.39 Electricity cannot yet be stored economically in large quantities. We therefore need to have sufficient spare capacity to deal with variations in supply or demand, especially at times of peak demand. This is the plant margin[16]. It enables the system to respond reliably and quickly to unexpected peaks in demand or unexpected interruptions in generation. In 2001/2 the installed plant margin in England and Wales was around 27%[17] falling to around 20% in 2002/3[18]. Chart 6.1 below shows the plant margin over the past decade. The decline has been partly due to plant being mothballed. Recently mothballed plant could be returned to service at relatively short notice and low cost if required. In future, measures to make demand more flexible, for example through new metering technology, may mean that a smaller margin could provide the same level of security.

Chart 6.1
Installed Capacity and Electricity Demand, England and Wales



Source: NGC. 2002/3 data are provisional to date, average for 2002/3 is DTI estimate

16 Installed Plant Margin is defined as (Installed Capacity - Peak Demand)/Peak Demand and is expressed as a percentage.

17 *NGC Seven Year Statement Update January 2002*. Since 1990/91 the installed capacity margin has varied between 18% and 32%.

18 *NGC Seven Year Statement Update January 2003*. The margin in Scotland is currently 28%.

6.40 Wholesale electricity prices have been low recently. This is a result of the considerable increase in investment in generating capacity following higher prices in the 1990s. Recent prices are lower than many companies anticipated and some of them have found themselves in financial difficulty. Given current prices and the amount of existing capacity available there is currently no need or incentive for significant investment in new generation plant apart from renewables. These are not market failures. They are proper market responses. But some people have expressed concern about the longer term prospects for investment.

6.41 Over the next 20 years almost all our existing nuclear power stations will close as they end their operating lives. Most existing coal-fired power stations will also close as they age and as environmental controls become more stringent. There is inevitably a good deal of uncertainty as to the type and location of stations that will replace existing capacity as market participants respond to evolving price signals. But given current levels of capacity, including mothballed plant, and our expectations of growing renewables generation and energy efficiency improvements over the coming years, we are unlikely to need significant new investment in non-renewable power stations over the next five years or possibly longer.

6.42 A number of electricity markets elsewhere employ a form of capacity margin instrument (CMI) to seek to secure a fixed level of capacity margin, often to counteract the effect of price caps imposed elsewhere in their electricity markets. We have reviewed the case for such a measure here[19].

19 NERA study: *Security in Gas and Electricity Markets*, October 2002. NERA study: *Electricity Markets and Capacity Obligations*, December 2002.

6.43 We have concluded that the case has not been made for such an instrument in the UK market. The UK market already provides strong financial incentives for suppliers to contract for sufficient power. We also note that experience with CMIs in other countries has been mixed. Some have been subject to material alterations within short time periods the very sort of regulatory risk that the instrument is supposed to offset. NERA also estimated that a CMI could increase costs to consumers by some £150 million per year.

6.44 Licence conditions on NGC[20] and electricity suppliers[21] also play an important role in maintaining security. OFGEM enforces licence conditions, a breach of which can lead to financial penalties of up to 10% of turnover. OFGEM can also modify licence conditions, or put new ones in place, with the agreement of electricity industry participants or after reference to the Competition Commission. **We will look to OFGEM to use its powers vigorously to apply and enforce appropriate licence conditions.**

6.45 OFGEM has confirmed that it considers that the current statutory framework, including the duties and functions set out within the relevant Acts and contained within related documents such as the Grid Code, is sufficient to help ensure the security of the balancing of the electricity transmission system. **Through JESS[22] we will keep this under review.**

20 For example National Grid Company has a licence condition to promote the security and efficiency of the electricity generation, transmission and distribution systems in England and Wales.

21 Electricity suppliers are required to take all requisite steps, so far as is reasonably practical, to secure the necessary supply of electricity.

22 The DTI/OFGEM Joint Energy Security of Supply Working Group.

6.46 In addition, OFGEM has agreed to publish a report every six months on the performance of the electricity and gas industries in delivering security, detailing any issues which have given rise to energy reliability concerns and saying what, if any, actions had been taken or might be needed to address those issues in future. These reports will be in addition to the forward looking security monitoring role of JESS.

A diverse mix of electricity generation...

6.47 Some people argue that the UK Government should specify the mix of fuel sources in electricity generation, allocating a proportion to gas, a proportion to coal and so on. We have considered this proposition carefully and have dismissed it. In our view Government is not equipped to decide the composition of the fuel mix used to generate electricity. Our preference is for a market framework with the right regulatory framework.

6.48 But neither should we allow ourselves to become overly dependent on any one fuel source across the whole economy or in a specific sector, such as electricity generation. It is our view that the policies we put forward in this paper will encourage the long-term development of new, more diverse and cleaner energy technologies that will promote both energy reliability and our low-carbon objectives.

6.49 Coal (UK produced or imported) and nuclear power have traditionally offered sources of electricity relatively secure from sudden changes in other international energy markets. The future of coal generation and new measures to encourage the development of carbon capture and storage are discussed below. The future of nuclear generation is discussed in chapter 4.

6.50 Diversity goes beyond a simple choice of fuels. It relates to how the fuel or energy is moved and used and to the range of sources for any particular type of fuel. Additional electricity interconnectors, like the existing one to France, would increase resilience. Projects are being developed for new direct current electricity interconnectors to Norway and the Netherlands and discussion is underway on a possible link to the Republic of Ireland. These are essentially market decisions, driven by the commercial assessments of electricity suppliers.
We will continue to keep the diversity of the electricity mix under review.

Gas supply flexibility...

6.51 Demand for gas in the UK is highly seasonal. We have a relatively low level of strategic gas storage compared with France, Germany and Italy. This is not of itself a problem, provided that the market can continue to deliver sufficient flexibility to meet demand, especially as UK gas output falls and with it the capability of UK gas fields to meet short-term periods of high demand. Alternative ways of providing supply flexibility such as new storage projects and flexible import contracts appear to be being delivered by the market. The diversity that these projects can bring to the market in term of flexibility of entry points and means of delivery will be welcome. The provision of timely new infrastructure will be important in backing up these commitments and, along with progress on EU liberalisation, provides confidence that access to flexibility can be maintained.
We will closely monitor and assess the adequacy of provision of sufficient supply flexibility to the UK gas market.

Availability of Networks...

6.52 Gas and electricity networks, and their uninterrupted operation, are essential to security of supply. In other utility sectors, there are provisions for the appointment of an administrator in the event that the operator of a network becomes insolvent. During the passage of the Enterprise Bill last summer, we undertook to consider further the case for special provisions for gas and electricity. **We now propose to undertake a public consultation on the need for an administration regime for gas and electricity networks, including the scope of the provision, its potential effectiveness, and other details.**

Monitoring the situation...

6.53 We have set out above our response to the security of supply risks we face. All are important but none appears to pose an immediate or unmanageable threat. There are many triggers within a liberalised market to incentivise energy reliability. And markets are likely to deliver energy reliability most cost-effectively. The experience of California, though, shows that it is important for governments to monitor reliability, including how their own actions may influence market behaviours.

6.54 **We will continue actively to monitor energy security through JESS and to make the conclusions of that group publicly available.** The group will continue to provide the market with assessments of supply and demand information and will periodically review the dependence of the networks on particular facilities. **We will use the information gathered by JESS as a guide to issues in the market or regulatory system or elsewhere (for example planning) that may be preventing an adequate market response.**

6.55 **Where the issues fall outside OFGEM's remit, close joint work between the FCO and DTI will be put in hand to monitor wider issues of energy security.**

Handling the carbon consequences of coal-fired generation...

6.56 For most of the time since the industrial revolution, coal has been the main source of primary energy in the UK. Even now coal generation provides around a third of the UK's power output. But in a low-carbon economy the future for coal must lie in cleaner coal technologies - which can increase the efficiency of coal-fired power stations and thereby reduce the amount of carbon they produce - or carbon capture and storage. Electricity generation from coal will become more expensive when measures already agreed in the EU's large combustion plant directive (to control emissions of sulphur dioxide, nitrogen oxides and dust) comes into effect. Plant that does not meet demanding emissions standards is likely to be retired over the period to 2015. EU-wide carbon emissions trading will also make coal less attractive as a source of power. By 2020 coal generation's contribution to the UK's power output is likely to be significantly lower than today.

6.57 If ways could be found cost-effectively to handle the carbon, keeping coal-fired generation in the fuel mix would offer significant energy security and diversity benefits. Coal is easy to store and transport and can be sourced from diverse of stable suppliers both domestically and worldwide. Loads in coal-fired stations can also be varied relatively easily, so coal fired generation is particularly useful in meeting peak demand or covering for supply intermittencies in other fuels. This may encourage generators to keep some coal-fired plant so as to give themselves the capacity to meet demand under a variety of circumstances. But by itself this would be unlikely materially to increase UK energy security more generally.

6.58 If coal is to play more than a marginal role in the mix beyond around 2015, generators will need to find economic ways of dealing with the consequential carbon dioxide emissions. One option is to capture and then store the carbon dioxide. The most promising approach at present would be to lock the gas away in geological structures such as depleted oil and gas fields. There is significant international interest and effort going in to carbon dioxide capture and storage, especially in the USA and Canada, where many of the technical obstacles to economic implementation are being researched. The UK North Sea offers a potentially very valuable resource in this respect, as do other offshore reservoirs.

Carbon capture and storage may offer a promising way forward...

6.59 Carbon capture and storage (CCS) - and the potential value of carbon dioxide injection for enhanced oil recovery (EOR) as a means of extending the life of the North Sea oil reserves - is described in detail in the box below. The recent review of cleaner coal technologies[23], shows that CCS is currently constrained by a number of significant legal and technical issues. Measures to address these are the subject of a number of current follow-up projects.

23 Cleaner coal review: www.dti.gov.uk/energy/coal/cct

Carbon dioxide capture and storage (CCS)

CCS offers the potential to deal with the carbon emissions from using fossil fuels in electricity generation or from other large CO_2 sources (such as chemical plants and refineries). In coal plant it could be achieved either by capturing the CO_2 from flue gases or technically more easily by gasifying the coal prior to electricity generation (in an integrated gasification combined cycle - IGCC - plant).

Once it is captured the CO_2 needs to be placed in some form of long-term storage. The Chief Scientific Adviser's Energy Research Review Group identified CCS as an area in which increased research effort could yield major breakthroughs. In particular, it suggested that effort be concentrated on fundamental research into storage which was less well understood than capture. The theoretical storage capacity of suitable geological formations (depleted oil and gas fields and deep saline reservoirs) is massive, subject to cost and the environmental and public acceptability.

European capacity for storing CO_2 in geological formations could be around 200GtC, mostly under the North Sea and mainly in the Norwegian sector and the UKCS. About 95% of this potential is in deep saline aquifers and only about 5% in depleted oil and gas fields. The North Sea oil and gas well capacity in the UKCS is sufficient to absorb all UK CO_2 emissions at current levels for up to 15 years, potentially hundreds of years if saline aquifers are included. Theoretically there could be further capacity in unmineable coal seams but further investigation is required.

Geological formations are capable of containing gas. They have done for thousands of years. Geological sequestration should be capable of retaining CO_2 for a very long time, perhaps indefinitely. But accessing reservoirs would necessarily disturb them and leakage might occur, for example through geological faults, seismic activity, failure of pipelines or other engineering components and groundwater movement. The political and public acceptability of CCS is likely to depend at least in part on a convincing risk analysis and on the ability to detect slow leaks if they occur.

A pilot project in the Norwegian sector of the North Sea is the only example of offshore carbon dioxide injection currently in process. This takes CO_2 that is co-produced with the gas in the Sleipner West field and injects it into an aquifer. In North America a number of projects are injecting CO_2 into oilfields to help increase oil recovery (known as enhanced oil recovery or EOR). During this process most of the CO_2 used ultimately remains in the oilfield, so is effectively sequestered.

EOR would allow additional oil recovery from the UKCS - 200Mt (1.5 billion barrels) may be achievable over 20 years. This compares to current annual oil production of about 130Mt. But the current rates of field depletion mean that this opportunity only exists in the short term and CO_2 injection needs to start by 2006/8 if it is to have an impact on the largest fields before the existing infrastructure is dismantled.

Enhanced oil recovery...

6.60 Although enhanced oil recovery (EOR) has benefits both in terms of extending our existing oil reserves and reducing carbon emissions, studies by Future Energy Solutions and others[24] suggest that EOR is unlikely to be cost effective in a time scale that will fit the existing UKCS needs. A single carbon dioxide pipeline from a medium sized coal power station together with onshore compression and wellhead injection and handling facilities could cost around £1-1.5 billion. The additional oil recovered could justify this investment but would not cover the costs of capturing and storing the carbon dioxide at source.

6.61 Coal-fired power stations offer the most likely source of the volumes of carbon dioxide that are likely to be needed for EOR. Integrated gasification combined cycle power plants (IGCCs) gasify coal to produce power, hydrogen and carbon dioxide. These offer a particularly promising source of carbon dioxide. Two schemes at Onllwyn in Wales and at Hatfield near Doncaster are actively being developed at present and have applied for Section 36 planning consent to build power generation capacity. This plant would also be able to generate large quantities of hydrogen, potentially of interest in enabling the development of production scale hydrogen projects.

6.62 If EOR is to be of value to the UK it needs to start within 5 years. Large fields (Forties, Brent, Ninian, Fulmar) would offer the best prospects. In addition to the short-term carbon savings an EOR scheme would offer, this would also deliver a basic infrastructure to enable the delivery of carbon dioxide for later CCS as and when the technological, legal and gas security issues are resolved. The infrastructure would be significantly easier to fund from the anticipated EOR revenue streams than if it were to be funded for CCS alone from expected carbon emissions trading benefits. And since the technologies need to be demonstrated and tested in an offshore environment before firm commitments could be made to a CCS scheme, an EOR project would also provide significant help to the research and analysis of the options. There is also considerable international interest, and potentially access to international funding, provided the UK can offer leadership to demonstrate some technically distinctive options.

6.63 Given the potentially significant strategic role that might be played by CCS in longer-term energy security, we believe there is a strong case to examine more closely what might be done to help stimulate the take-up of EOR in the North Sea. **We will therefore set up an urgent detailed implementation plan with the developers, generators and the oil companies to establish what needs to be done to get a demonstration project off the ground. This study will reach conclusions within six months to enable firm decisions to be taken on applications for funding from international sources as soon as possible thereafter.** This will follow on from the initial work already sponsored by the DTI[25].

24 The papers from this work are being published on www.dti.gov.uk/energy/coal/cct/co2capture.shtml

25 The papers from this work are being published on www.dti.gov.uk/energy/coal/cct/co2capture.shtml

There may be opportunities for cleaner coal technologies...

6.64 Coal will remain the dominant generating fuel in large parts of the developing world such as China and India for many years to come. UK industry is potentially well placed to promote cleaner coal technologies, technology transfer and capacity building into developing countries. In the longer run it should be possible for UK project developers to benefit from carbon credits through international trading under the Kyoto Protocol clean development mechanism. With this in mind, we have already put in place a programme of support for advanced traditional cleaner coal technologies[26] which is intended to bring forward demonstrator projects that may help to showcase the relevant technology more widely.

Coal mine methane is a legacy to be managed...

6.65 Disused coal mines continue to produce methane even after they are closed, although the amount of methane reduces over time. Methane is significantly more damaging to the environment in terms of its global warming potential than carbon dioxide. Where it can be captured this gas can be used to generate electricity and heat, thus contributing to the energy mix and reducing the greenhouse gas emissions from abandoned mines significantly. To help stimulate the industry we indicated in the 2002 budget that we would, subject to Commission approval, grant coal mine methane (CMM) plant an exemption from the climate change levy.

The current Cleaner Coal Technology Programme (worth £25m over 3 years) has two components:

Support for research and development into new cleaner coal technologies. These include:

- support for 40 R&D projects covering new technologies for coal gasification, higher boiler efficiencies, co-firing with biomass and computer simulation of cleaner coal-fired generation;
- a collaborative agreement with the British Coal Utilisation Research Association (BCURA) to provide support for joint projects designed to contribute to university R&D; and
- investigation into the feasibility of underground coal gasification and coal bed methane in the UK.

Facilitating the transfer UK cleaner coal technology to other countries and promoting the exports of UK expertise and products abroad. Activities have included:

- support for outward missions to promote UK technology;
- a Memorandum of Understanding with China for collaborative R&D and the promotion of cleaner coal technology;
- the production of a range of publications and seminars, in collaboration with the International Energy Authority, to promote cleaner coal technology and help reduce the non-technical market barriers to their development;
- help with initiating and establishing a major R&D collaboration on advanced supercritical technology under the auspices of the European Commission's Framework Programme; and
- liaison with the US Department of Energy to determine areas for future collaboration under the US/UK Memorandum of Understanding on Energy R&D.

Other work outside the CCT programme includes the possibility of Government support for retrofitting a supercritical boiler to an existing power plant in the UK.

26 Details available at www.dti.gov.uk/energy/coal/cct

6.66 The longer-term decline of methane emissions mean that CMM electricity generation will not offer significant long-term help to the reliability/diversity of UK energy supplies. But in the short term CMM presents a material environmental problem.

6.67 Even with existing levels of support a number of potential CMM electricity generation projects will remain uneconomic. The carbon valuation in the EU Emissions Trading Scheme is likely to provide a significant incentive to CMM mitigation projects that would otherwise not justify themselves. The route by which CMM may be able to claim credits under the EU Emissions Trading Scheme is expected to be project (as opposed to direct activity) based. **We will work to negotiate such an entry route and in the meantime we will work on a framework for pilot projects within the UK emission trading scheme for which CMM projects may be eligible.** The timetable for pilot projects is currently under review.

6.68 Even this, however, is unlikely to be sufficient to stimulate the industry in the short term, given the costs of generation from CMM as compared with the market price for electricity. We will continue to work with the industry to explore ways, including through the licensing system, in which we can help recognise the environmental benefits it secures. The industry has argued for the introduction of an obligation equivalent to the renewables obligation. But the renewables obligation has a specific aim - to develop long term carbon free generation technologies to the point where they become economically viable in their own right, and offering the obligation more widely risks undermining our longer term renewables aims. To offer a similar level of support (via a separate obligation or equivalent) to the whole chain from methane extraction to generation would be difficult to justify, since it is not clear how much methane would leak naturally and how much is extracted by the process of recovery. **We accept, however, the need to move to control CMM emissions and will work with the industry and relevant environmental agencies to find ways of doing so more effectively.**

The UK coal mining industry...

6.69 The level of coal-fired generation is not of itself a limiting factor on UK mines. Coal production in the UK will decrease over coming years predominantly as a result of the increasingly difficult geological and mining conditions in UK pits. Within 10 years most of our existing deep mines are likely to have exhausted their economic reserves.

6.70 Coal, like oil and increasingly gas, is an internationally traded commodity. Supplies are available from a wide variety of reliable sources. The relevant infrastructure notably in ports and the rail network is likely to be sufficient to meet expected demand in a very wide range of scenarios, subject to market-led investment. Given this relatively mature and flexible market, there do not appear to be strong economic grounds for supporting UK coal production as a hedge against import prices or security of electricity supply grounds for supporting production as a means of increasing diversity.

6.71 We recognise that coal producers can make positive contributions to areas that are often economically and socially disadvantaged, by providing well-paid and skilled jobs. The UK's

coal industry is the most efficient in Europe. It has made great strides in improving productivity and has shown itself able, except in unfavourable market conditions, to compete successfully both with other fuels and with imports.

6.72 Where there is the potential for coal companies to make worthwhile investments they have to date been prevented by EU rules from seeking government help in doing so. In 2002 we negotiated the flexibility we receive at an EU level to correct this anomaly[27] so that **we now propose to introduce an investment aid scheme to help existing pits develop new reserves**, where they are economically viable and help safeguard jobs.

27 The new Council Resolution on State aid to the coal industry (EC No 1407/2002)

Chapter 7 Productivity, competitiveness and innovation

7.1 Raising the sustainable rate of economic growth and maintaining industrial and business competitiveness are central to our economic strategy. Energy has an important role to play as a key input - without reliable supplies the economy and our national infrastructure would not function. But we must also ensure that the price of energy allows us to maintain our competitiveness. Our recent white paper on *'Productivity and Enterprise'*[1] set out the benefits of liberalised markets. As in other markets, vigorous competition in energy stimulates innovation and ensures the efficient allocation of resources, improving service quality and driving down prices.

7.2 To boost productivity and competitiveness we need to:

- ensure efficient markets which deliver competitive prices for business and domestic consumers;
- promote resource productivity - this will benefit the economy and individual businesses as well as increasing energy security and reducing carbon dioxide emissions;
- pursue our energy policy objectives through market mechanisms which promote competition, flexibility and efficiency; and
- help business by setting a clear and consistent long-term policy framework.

7.3 To deliver these goals in the energy system we need to address what the Government has identified as the key drivers of productivity. These are:

- to strengthen the **competition** regime to encourage firms to innovate and minimise costs and to deliver better quality goods and services to customers;
- to promote **enterprise** to help new and established businesses to start up, develop and grow;
- to improve **skills** through better education for young people and greater training opportunities for those already in the workforce;
- to support **science, research and innovation** to utilise the potential of new technologies and to develop new ways of working; and
- to encourage **investment** to improve the stock of physical capital.

We need to maintain competitive energy prices...

7.4 The energy sector represents around 4% of UK GDP but is a required input to the other 96%. To maintain competitiveness and encourage inward investment, energy for businesses and consumers must be competitively priced, including in comparison with other EU and G8 countries.

7.5 Vigorous competition improves efficiency and drives down prices. This has already been seen in energy markets. For domestic consumers, average prices in real terms fell by 10% for gas and 19% for electricity between 1997 and 2002. For industrial users, between 1997 and 2001, electricity prices fell by 22% in real terms, even when the climate change levy is included. This can be attributed to measures like the introduction of NETA, increasing competition in the supply market and the reduction in the fossil fuel levy feeding through to contracts. Our industrial gas and electricity prices were the second and third lowest respectively in the EU in 2001. Our domestic gas and electricity prices were the second and fourth lowest.

1 *Productivity and Enterprise: A World Class Competition Regime*, July 2001

7.6 The impact of the measures to promote energy efficiency proposed in this white paper should mean that, for many households and users, energy bills should fall as the amount of energy needed and consumed is reduced, although the unit price for energy charged to consumers and users is likely to rise. Over the 17 years to 2020, the policy measures suggested here - on emissions trading, renewables and energy efficiency - might add approximately: 5-15% (per unit) to household electricity prices and less than 5% to household gas prices; and 10-25% to industrial electricity prices and 15-30% to industrial gas prices[2]. Such price increases would not translate into similar increases in energy costs. A part of the price impact reflects energy efficiency measures which should lead to reductions in energy use.

7.7 Assessments like these are very uncertain and it will be important to keep price impacts under review. Much of the impact is due to the EU emissions trading scheme (which, being EU-wide, will impact widely on European prices) and is dependent on how the scheme develops as well as on the price of carbon in the trading market. It is important to put these potential rises in context. Electricity prices have fallen significantly in real terms over the last 20 years to their current historically low level. Even under a high case scenario the price of electricity to domestic consumers should remain below that for, for example, the 20 years to 1995. For industrial consumers, prices might return to the levels of the early 1990s but remain below those for the whole of the 1970s and 1980s. For domestic consumers, a high case scenario could see prices rising to late 1990s levels, although this would still be below the level during nearly all the 1970s and 1980s. Industrial gas prices have already increased from a historically low level in the mid 1990s. The high case scenario is that they might return to the level of the late 1980s. To the extent that such an increase in gas prices reflects a rising wholesale price, this will also affect the UK's competitors in Western Europe in a fully liberalised gas market.

7.8 NETA was introduced in 2001 to replace the electricity Pool and was designed to bring greater efficiency to wholesale electricity trading while maintaining the operation of a secure and reliable electricity system. Under NETA the bulk of electricity is traded forward through bilateral contracts and power exchanges. It also includes a short term balancing mechanism to ensure supply meets demand at all times. NETA provides for more direct competition in wholesale electricity than occurred under the Pool. Traded wholesale electricity prices are around 40% lower than in 1998. The market has now seen a significant increase in liquidity and trades.

7.9 Our market is also - unlike California in 2000 - dynamic. Under NETA, generators and suppliers are encouraged to use hedging arrangements and contracts to avoid exposure to volatile prices in the balancing mechanism. In California, regulators prevented suppliers buying power on long-term contacts. As a result, forward signals were too weak to trigger new generating plant. California also faced the reluctance on the part of regulators to adjust price controls on consumer prices (price controls in GB were abolished in 2002), transmission

2 All price assumptions in real terms.

constraints, and very fast demand growth. The UK market is different. Nonetheless we recognise we must remain vigilant.

7.10 The UK market is also increasingly competitive. The number of companies generating electricity has risen considerably from 6 at the time of privatisation to over 30 by October 2002. Competition is also forcing companies to work harder to attract and retain customers. By June 2002, 8.3m domestic electricity customers - 34% of total domestic customers - had switched from their incumbent electricity supplier. So had 7.1m domestic gas consumers - 36% of the total. Although switching continues to take place at a high rate - 115,000 electricity customers change their supplier every week - the market is not yet mature. We are working with OFGEM, Energywatch and the industry to ensure that the market works better and that consumers have confidence in it. In particular we are supporting efforts to stamp out mis-selling of electricity contracts, improve the customer transfer process and ensure that mistaken transfers are corrected quickly.

7.11 Energywatch will also be seeking to ensure that both the industry as a whole and individual companies improve their performance in a range of other areas of customer contact, including the administration of complaints and the management of accounts. This is designed to reduce complaints by addressing them at source. We will also consider, with Energywatch, OFGEM and the industry, whether the funding arrangements that support Energywatch can more accurately reflect the performance of suppliers in relation to their customers.

Energywatch

Energywatch was established under the Utilities Act 2000 as an independent advocate for consumers in the gas and electricity markets. It works closely with OFGEM, the gas and electricity regulator, which carries enforcement powers. Energywatch's aim is to provide consumers with a "one stop shop" service that:

- investigates and resolves consumer complaints about energy companies;
- helps the energy companies improve their complaint and enquiry handling;
- deals with enquiries from members of the public; and
- produces consumer information and advice.

Energywatch recently published its Forward Work Programme for 2003/4 outlining its key priorities. The document is available on Energywatch's website: (www.energywatch.org.uk/about_energywatch/forward_work_plan/index.asp)

...there is a clearly defined role for Government...

7.12 The role for Government in the market is to set the right competition and regulatory framework. We recognise that competitive markets cannot deliver some wider policy objectives. We have a role in correcting market failures, including countering socially or environmentally undesirable outcomes. For example the market may not properly value externalities created by energy efficiency or innovation. But government intervention is justified only where it is well targeted, cost-effective, affordable and efficient, promoting appropriate signals within a credible long-term framework.

7.13 As stated in chapter 1, this white paper demonstrates our commitment to the principles of better regulation. In particular:

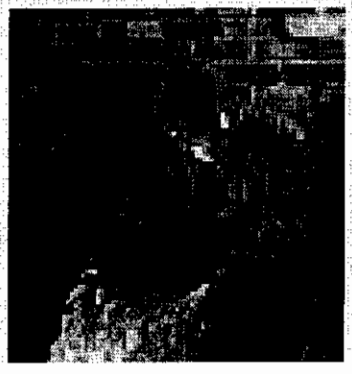
- to engage with stakeholders to find out what they need from policy;
- to examine what instruments are available to achieve those outcomes, with a preference for market measures;
- to treat regulation as the last option if nothing else will work;
- to use existing regulations where possible; and
- to impose new regulation, exceptionally and then only when it is fit for purpose.

We must seize opportunities to promote enterprise...

7.14 Moving to a low carbon economy also presents opportunities for businesses to seize competitive advantage. We have established a number of Innovation and Growth Teams (IGT) and some of these have looked specifically at energy issues. For example the Automotive IGT considered the future contribution of low carbon transport within its overall remit of safeguarding the competitiveness of the UK's automotive sector. Manufacturing standards - be they quality, environmental, health, safety or security - also have a vital role to play.

7.15 Businesses will need to adjust their own operating practices to reduce their carbon intensity and will need advice and incentives to help them. This means simplifying access to funding, particularly for smaller businesses, alongside DTI's reform of its general business support schemes, replacing them by fewer, streamlined schemes. All this will help businesses to seek funds for the purposes of energy innovation. Local Energy Efficiency Advice Centres will also be able to advise on national sources of funding. **We will complement this by developing a single web-based portal for businesses wanting access to energy support schemes, as part of a single knowledge bank for business support schemes. The Energy Saving Trust and the Carbon Trust are also piloting a project for Small and Medium-sized Enterprise Energy Advice Centres (SMEEACs).**

7.16 The PIU called for a fundamental review of low carbon support programmes aimed at business, particularly the Carbon Trust and the Energy Saving Trust. Although we consider that some of these bodies and programmes are too new to review now, **we will review low carbon delivery programmes and associated support bodies before the end of 2004 in the context of a review of low carbon instruments more generally in advance of the introduction of the EU emissions trading scheme**.



Resource Productivity and Sustainable Consumption and Production (SCP)

The Strategy Unit's (formerly PIU) report, *Resource Productivity: making more with less* (November 2001) was one of three linked reports which also included its Energy Report and its recently published waste report, *Waste not, want not* (November 2002). The outcome of the World Summit for Sustainable Development last year, particularly a commitment to a ten-year drive on SCP, has recently re-focused our follow-up work on resource productivity. In coming months we will develop a strategic overview of resource productivity and SCP more widely. This will:

- set out the economic, social and environmental rationale for long-term policy planning to decouple economic growth from environmental degradation and resource use;
- draw on the two major policy blocks of energy and waste as core elements of an SCP future;
- consider the case for and identify further indicators for resource use as a means to stimulate and track long-term improvements;
- set out our approach to sustainable consumption, with specific proposals to help empower consumers and improve environmental impacts of goods and services (eg with better information right through the supply chain); and
- identify the key policy levers for encouraging SCP, and set out how a co-ordinated use of tools and instruments could drive such a programme - eg economic pricing instruments, support for innovation, procurement, signalling of future targets and minimum standards.

Addressing skills...

7.17 We need to address skills development, training and an ageing workforce in the energy industries. The problems are widespread:

- nearly a third of staff in offshore oil companies are over 45 and only 6% under 25. 20% of companies provided no regular staff training - nearly 40% for smaller companies[3];
- even without new build the nuclear fuel cycle, power generation and environmental restoration sectors are likely to need around 19,000 graduates and skilled trades people over the next 15 years to replace retirements and satisfy demand in environmental restoration[4];
- the Gas and Water Industry National Training Organisation (GWINTO) has predicted that there could be a major shortage of skilled gas installers in the coming years; and
- key skills in companies building major infrastructure such as power stations and refineries are currently concentrated in the over-50s.

7.18 Many employers invest in training but finding time and resources can be difficult, particularly for smaller companies. Our *Manufacturing Strategy*[5] emphasised the importance of a skilled workforce to a productive and competitive economy - not only technical skills but also leadership and management

3 Skills Foresight, *The Industry Survey*, OPITO 1999

4 *The Report of the Nuclear Skills Group*, DTI, December 2002 (www.dti.gov.uk/energy/nuclear/skills/nsg.shtml). The figure of 19,000 is based upon the age profile that currently exists in the sector and the assumptions that the fuel cycle will remain stable, the planned closure programme of Magnox and AGR power stations will proceed and that the numbers engaged in environmental restoration will double over the next 15 years. No allowance has been made for potential new build.

5 *The Government's Manufacturing Strategy*, DTI, May 2002 (www.dti.gov.uk/manufacturing/strategy.htm)

skills. It also highlighted the need for a demand-led approach, combining government investment, access to best practice support and increased support for the science base. This implies close co-ordination across the industry, in particular between employers and education and training providers and also through supply chains (especially where seasonal shifts in workloads are a factor).

We are addressing similar skills needs across the economy...

7.19 Such problems are not energy-specific. We are already addressing common problems across the economy[6] which are also relevant to the energy sector. In particular we are:

- investing an extra £100m per year by 2005/06 through the Office of Science and Technology (OST) to improve the development of the UK's science and technology skills base;
- targeting science and mathematics teaching in schools to ensure that we have the right mix of teaching skills at primary and secondary level and also providing resources (including £60m between 2000 and 2002) to modernise and upgrade science laboratories;
- commissioning an independent review into how business can draw more effectively on university expertise, to report in summer 2003;
- publishing a new skills strategy for England in June 2003 aimed at reducing our productivity gap with major competitors. It will cover both demand (from employers and their investment in skills and training) and the supply of skilled people. Government, business, the new Sector Skills Councils (SSCs), the Sector Skills Development Agency, the Learning and Skills Council, Regional Development Agencies, other public and private bodies and employers will need to work together to identify skills needs and measures to deliver them. Resources for SSCs will increase to £42m in 2003/04, to £45m in 2004/05 and to £48m in 2005/06[7];
- raising the profile and attractiveness of apprenticeships with a major marketing campaign to promote Modern Apprenticeships. A new National Modern Apprenticeship Task Force has been set up as a high level, employer-led body, driving the expansion and development of Modern Apprenticeships, so helping to meet the nation's skills needs and the aspirations of young people; and
- extending training for lower-skilled workers, helping highly skilled individuals to enter the UK and encouraging take up of Investors in People in small firms.

The energy sector also has specific needs...

7.20 We will ensure that these cross-cutting initiatives take proper account of energy issues, such as the move to a low carbon economy, which will affect businesses across the economy. For example:

6 Links to more detailed information about the measures set out in this paragraph and others can be found on the DFES and HM Treasury websites (www.dfes.gov.uk/learning&skills/index.shtml) (www.hm-treasury.gov.uk/Documents/Enterprise_and _Productivity/Research_and Enterprise/ent_res_roberts.cfm)

- our Fuel Poverty Advisory Group is considering ways to encourage small firms to take on apprentices and possible links to government and local authority funded programes; and
- we are working closely with the industry and training providers to review the skills and research capabilities required to manage more distributed generation in the future. And we are looking into supporting the creation of a 'centre of excellence' in distributed generation which will bring together universities that have power systems expertise to enhance UK R&D capability.

7.21 We recognise the interrelationship between skills, research and innovation: skills tend to drive innovation; in turn innovation creates more demand for new and established skills. A healthy research base is crucial to nurturing the skills needed to manage the effective application of emerging new energy technologies. Not all research training in our universities will produce radical new technologies but the skills and expertise developed will equip people for the vital task of implementing and maintaining new energy infrastructure.

7.22 We are committed to working with employers in the energy sector, both through the evolving SSCs and the SSDA, involving Government and other bodies at central, devolved[8], regional and local level as well as education and training providers. This includes the SSC for the oil and gas extraction and chemical manufacturing sector (COGENT[9]), which was set up in April 2002.

COGENT

COGENT works with employers, Government and education and training providers. It aims to stimulate action at all levels of industry and emphasises that skills and training have to be a Board-level concern. It has already launched:

- an offshore technician training scheme to bring in 150 new trainees each year;
- a programme aimed at engineering undergraduates, promoting careers in the oil and gas sector; and
- interactive web-based material for schools, featuring young people talking about their jobs in the industry.

It also includes the developing SSCs for the Process and Manufacturing sector and the Science, Technology and Engineering Training Alliance (SEMTA), which will address some energy-related areas.

7.23 Upgrading skills will be vital for effective delivery of the step change in energy efficiency, particularly in the household sector, which is our goal. We therefore welcome the proposed creation of an Energy Utility SSC and look forward to working through such an SSC, provided it achieves licensed status, to develop new ways to enhance the skills and training of employees in the energy efficiency industries.

7.24 It would be premature for Government to attempt to prescribe in detail what action should be taken to address skills in the various sectors of the energy industry at a time when a network of employer-led SSCs is emerging. **Through the SSDA we are working closely with employers to ensure**

8 Training and education are devolved issues and both the Scottish Executive and the Welsh Assembly Government will have their own skills strategies and policy measures

9 www.cogent-ssc.com

that, as soon as possible, all parts of the energy industry are included within the emerging SSC network which has recently received a substantial increase in Government funding (see paragraph 7.19). This will enable energy employers to articulate their needs, influence training providers and improve productivity and service delivery - at the same time building on existing work in the energy industry (in many cases undertaken by the former National Training Organisations) and new ideas and proposals. For example:

- the Electricity Training Association is commissioning a Skills Foresight Project to identify the skills requirements of the renewables industry to 2010; and
- GWINTO has made proposals to address shortages of gas installers including a pilot project with EAGA to deliver around 400 qualified central heating installers.

7.25 In December 2002 we published the results of a nuclear and radiological skills study[10]. Although there is no immediate, general skills shortage, some shortages do exist, particularly in safety case production and radiological protection; there are problems associated with an ageing workforce; competition for engineering and science skills; and uncertainty about the future of nuclear power. In response, a task group is being formed across the sector to develop and implement a workforce development strategy.

We need to support action by others...

7.26 We aim to achieve a better and more appropriately skilled workforce to meet our energy objectives - which means adopting a common approach that connects supply and demand for skills development. This must be driven by employers, in collaboration with others - with education and training providers and with related and supply chain partners. Innovative thinking will be needed, for example to make the most of transferable skills. Offshore construction and engineering skills can be adapted to the development of offshore windfarms, and engineers leaving the armed forces can be retrained to work in a variety of energy sectors. Employers could encourage older workers to stay on to help meet skills shortages and to assist with succession planning or training. Such a collaborative approach will enable industries to build on the skills that already exist rather than pulling against each other.

We also need to become more innovative...

7.27 To achieve our objectives we need to exploit existing and develop new technologies. Industry will need to innovate to maximise the opportunities offered by a low carbon economy and by global markets in environmental goods and services.

7.28 Government needs to play a role in developing innovation, because the benefits, in terms of the environment and security of supply, do not always deliver short-term profits for the private sector. This is particularly true for low carbon technologies where innovation is needed to support major changes over a significant period of time. We should be wary

10 www.dti.gov.uk/energy/nuclear/skills/index.shtml

of picking technology winners, but we are ready to fund innovation where this can achieve the best results in terms of its policy objectives. We will also work to create a policy environment that encourages the private sector to bring the key technologies forward, and play a key role in the delivery of major new infrastructure. Of particular importance will be the move towards internalisation of the cost of carbon, through emissions trading (discussed in chapter 2). This should also help to incentivise low carbon innovation.

We are keeping innovation policy under review...

In November 2002 we began a broad review - including energy - that will by July 2003:

- assess the UK's relative innovation performance;
- identify strengths and weaknesses and where market or institutional problems inhibit innovation;
- identify how Government policies can help; and
- set out a new strategy, involving key stakeholders, to improve the UK's innovation performance.

We have also set up an independent review, led by Richard Lambert, on strengthening links between business and universities. The review team will consult widely with business, universities and national and regional administrations in the UK and overseas. The review will complement and contribute to the Innovation Review and will report to Ministers in late summer 2003.

We will invest more in energy innovation...

7.29 For the PIU Energy Review, a report on the Government's support for energy research, development and demonstration was prepared by the Government's Chief Scientific Adviser and a group of experts. This Energy Research Review Group (ERRG) was asked to look particularly at whether the overall level of expenditure on research, development and demonstration was sufficient and whether it was being targeted at the right areas.

7.30 The group concluded that the UK's spending should be raised. We are increasing public spending on energy research, development and innovation. DTI spent around £40m supporting sustainable energy-related research and technological development in 2001/02. We have already put in place a substantial renewables support programme worth in total £250m between 2002/03 and 2005/06. We will also, as described in chapter 4, increase the funding by a further £60m in this period. This is additional to the extra funding announced in the 2002 Spending Review, which allocated an additional £38m for energy policy objectives in 2005/06 compared with 2002/03.

7.31 We set up the Carbon Trust in April 2001 to lead on low carbon technology and innovation. It is spending £75m over the next three years. Funding for energy-related technology has also been available via the DTI's Innovation and Business Support programmes and through various European programmes. The Research Councils will spend over £11m on energy-related research in 2002/03. They have been allocated an additional £28m under spending review 2002 for further research in support of a sustainable energy economy.

Prioritise and properly co-ordinate our resources...

7.32 We endorse the ERRG's research priorities:

- carbon dioxide sequestration;
- energy efficiency;
- hydrogen production and storage;
- nuclear (particularly waste);
- solar PV; and
- wave and tidal power.

All these have been identified as areas in which increased support for research and development is particularly likely to result in step-change breakthroughs which will contribute significantly to carbon reductions.

7.33 ERRG also recognised the need for further research into social, economic and environmental factors as well as the crucial role of cross-cutting research, for example, in advanced materials, super-conductors, nanotechnology and biotechnology. It noted the importance of targeting support at basic research, as this is the point at which the maximum number of options can be generated for development and commercial application. We agree that basic research is critical to sustaining innovation over the longer-term.

7.34 A new Energy Research Network is being developed by the Research Councils to establish interdisciplinary teams with expertise in the scientific, technological, social, economic and health impacts of energy, providing much needed co-ordination and cohesion. A new UK Energy Research Centre will act as the hub, providing a national and possibly European focus to integrate and accelerate research in this priority area. It will play a key role in co-ordinating research, facilitating collaboration with industry and UK participation in international projects, as well as being a centre of excellence in its own right. The centre will also signal the importance the UK attaches to energy research, helping to attract high-calibre scientists and graduates to the sector.

Work with others internationally...

7.35 A number of countries are developing low-carbon technologies. We need to focus on areas where UK industries can deliver innovations before or better than others. But international collaboration is important where pooling resources can encourage innovation at lowest cost.

7.36 **We are promoting an international initiative to strengthen efforts to bring science, engineering and technology to bear on efforts to slow climate change, initially through the G8.** We will also continue to collaborate in IEA work in areas such as renewables, end use and fossil fuel technologies, fusion and the exchange of scientific and technical information on energy technology. In our relations with the United States we will build on the Memorandum of Understanding on energy R&D between the DTI and the US Department of Energy to develop a more strategic collaboration on energy technologies. We have recently published a report that shows that it should be technologically and economically feasible to achieve a virtually zero carbon energy

system in the long-term, if we use energy more efficiently and develop low carbon technologies[11].

The European Framework Programme

The European Framework Programme supports R&D projects across a range of science and technologies.

The new programme, beginning in 2003, gives more emphasis to renewables. We will continue to assist UK applications for its support. The DTI has also commissioned a study on how Germany, Spain and the Netherlands promote the programme and organise energy research, especially in relation to small and medium sized companies.

The ENERGIE programme supports R&D in the three broad categories of renewables, rational use of energy and fossil fuels. UK participants have received nearly €180m from this programme, around 20% of its budget.

The UK also participates in nuclear research under the EURATOM Programme, primarily on fusion research.

7.37 In the long term, nuclear fusion could provide power generation from an abundant fuel source with zero carbon emissions and without the problems associated with long-term highly radioactive waste. We are a long way from a commercial power plant, but the technical feasibility of fusion power generation could be demonstrated within 25 years given adequate resources, possibly leading to full-scale power generation within 30 years. The next step towards this is the construction of the International Thermonuclear Experimental Reactor (ITER) and the International Fusion Materials Irradiation Facility (IFMIF). The US and China have both signalled their intention to join ITER, an ambitious international research project to harness the potential of fusion energy. The project will involve the UK, US, China, Russia, Japan, Canada and other European nations. We expect ITER to lead, by the middle of this century, to the commercially viable production of clean, safe and renewable energy without the emission of greenhouse gases. The UK has considerable expertise in fusion and a complementary national fusion programme will also be needed to maximise the benefit from this expertise.

There will be significant new opportunities for investment...

7.38 The UK has a world-leading manufacturing, service and research capability in the energy field and a world-class science base. The power generation, transmission and distribution equipment and service supply industry alone makes a very substantial contribution to the UK's economy by way of goods, services and jobs. In 2001 21% of all industrial investment was made by the energy industries, compared to 20% in 1980[12]. There will be considerable opportunities for the UK energy industry to invest to meet the challenges of delivering the infrastructure, new technologies and solutions we will need in the future. With its long-standing knowledge and experience of the UK energy scene, the UK equipment and service supply industry has a central role

11 *Assessment of Technological Options to Address Climate Change, A Report for the Prime Minister's Strategy Unit*, December 2002 (www.strategy.gov.uk/whatsnew/whatsnew.shtml)

12 *UK Energy Sector Indicators*, DTI, December 2002 (www.dti.gov.uk/energy/index.shtml)

to play in helping us to achieve our objectives. The white paper sets a clear, consistent and settled framework against which business can plan to that end. We will continue to work with industry to help business move up the value chain and reap the commercial benefits this will bring, both in the UK and abroad through export opportunities.

Chapter 8 Energy and the vulnerable

Energy policy raises a range of social issues...

8.1 Most of us take for granted being able to turn the lights on and keep our homes warm. But for some people, basic energy needs account for a disproportionate amount of their income. We must ensure that as we address the security, environmental and competitiveness aspects of energy policy we also take account of social impacts, especially on the poorest.

We are making good progress in tackling fuel poverty...

8.2 Some households need to spend more than 10% of their income to heat their homes adequately and affordably - the 'fuel poor'[1]. Fuel poverty is caused by a combination of factors, including the energy efficiency of the home, fuel costs and household income. So we need better energy efficiency, competitive energy prices and increased incomes. We are committed to eradicating fuel poverty and have a legal obligation under the Warm Homes and Energy Conservation Act 2000 in England and Wales and the Housing (Scotland) Act 2001 in Scotland to specify a target date by which, as far as reasonably practicable, this will be achieved. *The UK Fuel Poverty Strategy*[2], published in November 2001, sets out policies for ending fuel poverty in vulnerable households in England - older households, families with children and householders who are disabled or have a long-term illness - by 2010.

We reaffirm these commitments and policies.

We aim that as far as reasonably practicable no household in Britain should be living in fuel poverty by 2016-18[3].

8.3 Encouraging progress is being made. In 1996 there were 5½ million UK households in fuel poverty. Today there are around 3 million. Of these about 2 million are vulnerable households. The 2½ million overall reduction is due mainly to energy price reductions and increased benefits. On current forecasts we might expect economic growth to take about 1 million more households out of fuel poverty by 2010[4]. We will publish our first annual progress report on the UK Fuel Poverty Strategy shortly[5]. This will provide more detail on the progress being made and the programmes in place.

8.4 Eradicating fuel poverty sustainably, particularly for the most vulnerable households, requires action in the home - better insulation, more efficient heating systems and minimising draughts. Together with the Devolved Administrations we fund a number of grant schemes to support this - Warm Front in England, Warm Deal and the Central Heating Programme in Scotland, the New Home Energy Efficiency Scheme (HEES) in Wales, and Warm Homes in Northern Ireland[6]. These schemes provide help for people on income or disability benefit. The energy efficiency commitment (EEC) requires half the target energy savings to be achieved in this priority group.

1 Different definitions of fuel poverty apply in each country, though we are working to bring them closer into line. There are also two methods of assessing income - either to include or exclude Housing Benefit and Income Support for Mortgage Interest. The figures quoted include this income. The numbers in fuel poverty are greater if this income is excluded.

2 www.dti.gov.uk/energy/consumers/fuel_poverty/strategy.shtml

3 In England and Scotland the target date is November 2016. Scotland has an interim target of achieving by 2006 a 30% reduction of people in fuel poverty as shown in the 2002 Scottish House Condition Survey. The Welsh Assembly Government has proposed in their consultation document a target date of 2018. There is no date yet for Northern Ireland.

4 assumes that incomes grow by 2.5% in real terms each year to 2010

5 www.dti.gov.uk/energy/consumers/fuel_poverty/strategy2.pdf

6 www.eaga.co.uk and www.txuwarmfront.co.uk/content/general/default.asp

Our recently published policy on sustainable communities[7] has an important role to play. Our target of bringing all social housing up to a decent standard will also contribute.

8.5 Continuing these initiatives in their current form and at their current levels would remove up to another 1 million vulnerable households from fuel poverty by 2010, though some of these will already have been removed through economic growth.[8]

But we need to do more...

8.6 Evaluations of Warm Front in England and a progress report on the first year of the EEC will be completed this year. These will help us assess the impact of the schemes and their contribution to our Fuel Poverty Strategy. The Warm Front review also provides an opportunity for changes to the scheme, looking ahead and ensuring the best use of our resources in fulfilling the Strategy.

8.7 **We are also exploring new ways of tackling fuel poverty.** Five pilot Warm Zones were established in 2001 - in Stockton, Sandwell, Hull, the London Borough of Newham, and Northumberland - bringing together the deliverers of Warm Front, energy suppliers, local authorities, health officials and others to provide a co-ordinated approach in a local area[9].

Tackling fuel poverty through partnership

The Dundee Community Energy Partnership brings together Dundee City Council, Transco, the Scottish Executive, and Scottish and Southern Energy, to identify areas of good practice and establish a working model. Partnership workers go door-to-door throughout the city to determine if there is fuel poverty, what measures are needed, and what the best use of funding programmes would be to help the household out of fuel poverty.

8.8 To advise on progress and suggest improvements in delivering the fuel poverty strategy, we established the Fuel Poverty Advisory Group in England. A similar group works with the Scottish Executive on progress in tackling fuel poverty in Scotland. We welcome the English Advisory Group's first annual report[10] as a valuable contribution to the challenge of meeting our fuel poverty targets. **We will work with the Group as we consider how its recommendations will be taken forward. In particular we will continue to:**

- **report annually on progress against the fuel poverty targets;**
- **keep under review the resources needed to achieve our targets;**
- **find ways to achieve greater efficiency in delivery, through closer co-ordination between the various initiatives which deliver energy efficiency improvements to the fuel poor;**
- **work across Government to ensure that policies on benefits, health and housing help to alleviate fuel poverty; and**
- **address the need to overcome skills shortages - see Chapter 7.**

7 *Sustainable Communities: Building For The Future* www.communities.gov.uk - see chapter 3

8 As with the estimated impact of economic growth, there is considerable uncertainty about the full impact on the numbers in fuel poverty.

9 www.warmzones.co.uk. A summary report evaluating the first year performance of Warm Zones is at www.est.org.uk/est/documents/warm_zones_evaluation_l_summary.pdf

10 www.dti.gov.uk/energy/consumers/fuel_poverty/fuel_adv_grp/report1.pdf

There is a need to tackle rural issues...

8.9 Most people in fuel poverty live in urban areas. But it can be more acute in the countryside, where houses tend to be older, less energy efficient and harder to heat. Also many people in rural areas do not have mains gas. Oil fuel, solid fuel, electric heating or liquefied petroleum gas (LPG) can be more expensive and less convenient. **The DTI is therefore working with Transco to identify areas where extensions of the gas network and connection to energy efficient gas central heating systems might be justified. We will explore options for pilot projects on gas extension.**

8.10 People living in rural areas are particularly dependent on cars and can be affected by higher fuel prices and the closure of filling stations. We have set up a taskforce with industry on services for rural motorists to look at issues such as the costs of environmental measures for small filling stations and schemes to support rural filling stations.

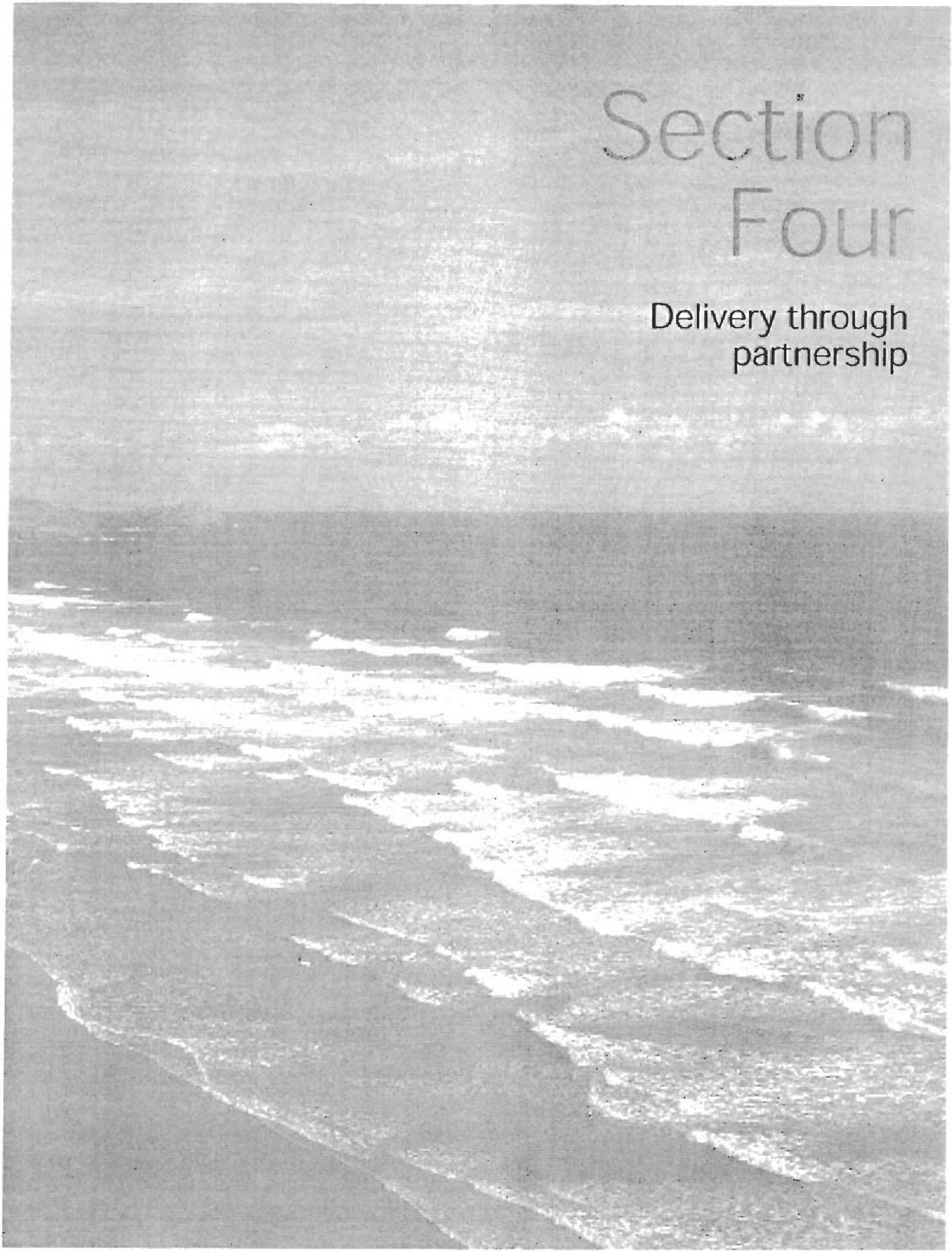
And internationally...

8.11 International development also has an important part to play in improving energy security in the medium to long term. We will promote economic growth, especially pro-poor growth, stability and good governance in energy-producing countries as part of our international development efforts. At WSSD[11] in Johannesburg last year it was agreed that concerted international action is needed for increasing access to sustainable energy services as a necessary requirement for addressing international development and poverty reduction objectives. The recent DFID issues paper *Energy for the Poor*[12] explains the importance of access to affordable, safe and reliable energy services in the achievement of the international UN Millennium Development Goals.

8.12 **We shall strengthen international dialogue on energy and development. We will support and promote two international WSSD follow-up activities aimed at improving access to energy services - the Global Village Energy Partnership (GVEP), whose leading partners include the United Nations Development Programme (UNDP) and the World Bank, and the EU Energy Initiative for Poverty Eradication and Sustainable Development.**

11 World Summit on Sustainable Development – see chapter 4

12 www.dfid.gov.uk/Issues and Briefing Notes



Section Four

Delivery through partnership

Chapter 9

We need to work with others...

9.1 People gave us a very clear message in the public consultation leading up to this white paper. They told us that they care about the environment and that they want to play their part in tackling climate change. But they need practical leadership and help to understand what they can do.

9.2 We have set a lead in this white paper. We have set out new objectives for energy policy, including a clear commitment to move towards a low-carbon economy. And we have set out new measures to deliver our objectives.

9.3 We will need to work with others to achieve these goals. The products and services needed in future will depend on business enterprise and innovation. Local authorities and regional bodies are pivotal in delivering change in their communities. We will continue to work closely with the Devolved Administrations. We will continue to need a sound basis of academic research and information. Independent organisations and voluntary bodies can communicate messages to the public and help them to get involved in decision-making.

9.4 And Government itself must change so that energy policy is looked at as a whole. Our challenge is to achieve all our objectives together rather than pursuing them as separate streams. And this approach needs to be reflected in the way energy markets are regulated.

We need new ways of doing things in Government...

9.5 We have set out a challenging, long-term, agenda for change. We need to make sure we have the institutions in Government to deliver it.

9.6 We do not believe we need a new organisation for this. We want to concentrate our energies on following through the commitments we have made, not on creating new machinery. We have shown, during the preparation of this white paper, that with commitment and effective leadership we can achieve extremely effective interdepartmental working. We intend to build on this. The white paper itself will give us a new focus for our future efforts in this respect.

9.7 This work cuts across traditional departmental boundaries. To deliver the programme successfully, we need to provide a clear locus for:

- advising the Government on energy security (including longer-term international trends) and on carbon emission targets;
- monitoring the introduction and impact of policies to deliver those security and carbon goals;
- monitoring performance;
- reporting to Ministers on performance and on any policy adjustments needed;
- reporting publicly on performance; and
- coordinating across Government on international sustainable energy issues.

9.8 **To this end, we will strengthen departmental analytical and strategic capabilities in the field of energy policy. The DTI's Energy Strategy Unit will provide the focal point of a network - a Sustainable Energy Policy Network - of departmental policy units that will be involved in delivering the white paper's commitments.** We expect the DTI, Defra, the FCO, the Treasury, the ODPM, DfT, the Scotland Office, the Wales Office, and the Devolved Administrations all to play a full part in this network. The regulators, particularly OFGEM and the Environment Agency, will also play an important part. The primary task of the network will be to ensure that the aims we have set out in this white paper are delivered. This will require the network, acting as a virtual unit, to ensure that the Government as a whole pursues effectively the policies and programmes that we need to deliver all our objectives, including a significant stepping-up of our international capability.

9.9 **To provide a clear line of accountability for the network, we will also put in place a new, ad hoc, Ministerial group which will oversee the delivery of the commitments in this white paper. This group will be chaired jointly by the Secretary of State for Trade and Industry and the Secretary of State for the Environment, Food and Rural Affairs. To support the Ministerial group, the governance of the Sustainable Energy Policy Network will be strengthened with the creation of a Sustainable Energy Policy Advisory Board, made up of senior, independent experts and stakeholders.** The role of the Advisory Board will be to provide the Ministerial group with a source of well-informed, independent advice on the approach and the work of the Network as a whole.

9.10 To ensure the transparency of the follow-up to this white paper, the Sustainable Energy Policy Network will publish annually a report on the progress being made towards the aims we have set out here. This will report on how the Government, regulators and industry are delivering security of short-term and long-term energy supply, moving towards our intermediate and longer-term carbon reduction goals (including those already set out in the Climate Change Programme), delivering our fuel poverty targets and maintaining the competitiveness of our energy markets more generally.

9.11 We will need appropriate indicators to monitor progress. Government already publishes an extensive range of energy indicators, and these will continue to be published annually.[1] But we need to focus on a smaller set of indicators to give a broad overview of whether overall energy policy objectives are being delivered. **Therefore, as a supplement to the white paper, we will be seeking views on the most appropriate indicators to focus upon.**

9.12 We also need to ensure that our future policies and measures take full account of their carbon impacts, that they are transparent and that information about them and about energy policy choices is available to business and the public in a format that they will find accessible. The recently updated guidance for regulatory impact assessments includes a provision to consider environmental impacts as part of delivering the Government's commitment to sustainable development. **A carbon impact assessment will in future be an integral part of assessing environmental impacts.**

1 *UK Energy Sector Indicators*, DTI, December 2002 (www.dti.gov.uk/energy/index.shtml)

Linking to the work of OFGEM...

9.13 Government sets the regulatory environment in partnership with OFGEM, the independent economic regulator for the gas and electricity markets. OFGEM has a key influence on the energy markets for which it is responsible. The way in which OFGEM and Government discharge their responsibilities will play a central part in determining whether the environmental transformation and the security of the energy industry we envisage in this white paper are delivered in practice. OFGEM and the DTI share common statutory duties under the gas and electricity legislation, but have separate responsibilities: the roles are complementary. Our proposals will facilitate dialogue, and provide for a clear, shared, understanding of objectives.

9.14 To help minimise inconsistencies between our energy policy objectives and the regulatory regime for the gas and electricity markets we need to:

- raise the profile of environmental considerations in OFGEM's regulatory decision-making;
- improve co-ordination and understanding between Government and the regulator on environmental objectives; and
- strengthen OFGEM's transparency.

9.15 To this end we propose a wide-ranging programme of action:

- **OFGEM has committed to producing regulatory impact assessments, including environmental impact assessments, for all significant new policies. This will enhance transparency until there is opportunity to provide statutory backing for these assessments through primary legislation, bringing OFGEM into line with the position in other areas, notably the Financial Services Authority and Ofcom;**
- **OFGEM is committed to publishing regular statements on security of supply;**
- **DTI, Defra and OFGEM will establish a joint working group on relevant environmental issues, and publish statements of progress though the Sustainable Energy Policy Network.** This group will build on the successful joint group which has been established for security of supply; and
- **we shall revise the statutory guidance on social and environmental issues in the light of this white paper making the guidance more specific.**

9.16 Many of the detailed rules for the electricity and gas markets are set in codes rather than in legislation or licence conditions. Industry code panels advise the regulator on proposals for modifications. OFGEM then makes decisions on code modifications. In making its decisions OFGEM is not bound by the panels' advice. We will:

- **seek to strengthen the code panels which advise on code revisions by ensuring they include people with expertise in renewables and the environment;**
- **work with OFGEM to strengthen the transparency and accountability of the code modification process.** OFGEM already publish reasons where they do not accept the advice of the industry code panel; and
- **also consult on a range of further measures, including whether it would be appropriate to provide for appeals against**

OFGEM decisions on certain code modifications. This consultation will take place within the wider context of a House of Lords inquiry into the accountability of regulators.

9.17 It has been argued that we should introduce a power of direction over OFGEM. We believe that independent economic regulation delivers very significant benefits. Although a power of direction would allow the Government to have a direct impact on regulatory decisions, we consider it would undermine the independence of the regulator, and politicise the regulatory process so as to cause unacceptable levels of uncertainty in the markets.

We must also work closely with the Devolved Administrations...

9.18 **We will continue to work closely with the Devolved Administrations on energy policy objectives, in particular through the new Sustainable Energy Policy Network.** We are encouraged that the Devolved Administrations are developing strategies and targets on devolved aspects of energy policy.

Scotland and Wales - Approaches to Energy Strategy

In **Scotland**, the Scottish Executive is committed to raising the overall proportion of electricity generated from renewable sources to 18% by 2010 (including existing large hydro). The Executive has recently consulted on the potential to generate as much as 40% of Scotland's electricity from renewable sources by 2020. Scottish Ministers are currently considering the views expressed and intend to make an announcement shortly about a 2020 target and the measures required to achieve it.

The Scottish Executive is also strongly supportive of a single GB market in electricity through BETTA.

Wales has a climate, geography and industrial structure which present tremendous opportunities for clean generation technologies which can be developed very much in accord with sustainable development principles, including creating wealth for communities from energy generation and supply chain growth. Renewable energy, CHP and energy efficiency opportunities have already been examined in depth by the Welsh Assembly's economic development committee and are being supported within the EU Structural Funds programmes. Against this background the Welsh Assembly Government and relevant agencies are strongly pursuing an increasingly active clean energy/energy-conservation strategy which will be further boosted in the light of the developments described in this white paper.

Regional and local leaders...

9.19 Local authorities and other local bodies, regional chambers and Regional Development Agencies (RDAs) make decisions that are vital for energy policy - for example on planning, regeneration and development, procurement, housing, transport and sustainable development. Specific examples are set out throughout this white paper. In future there will be greater emphasis on local and regional approaches in delivering our energy objectives. Local authorities have a growing role as community leaders. Elected regional assemblies will provide additional political leadership[2].

9.20 We already work with local and regional bodies in England on energy issues - for example, on energy efficiency. **We will build on this to develop a new package of measures to promote national objectives through local and regional decision-making.** This will enable local and regional priorities to be better reflected in national policy. Over time a more proactive role will be developed for local and regional bodies in energy policy.[3] Local policy is devolved and the Devolved Administrations will wish to consider whether to take action in their respective areas.

9.21 Several regions already have energy or renewables strategies. **We propose to build on these by taking steps to ensure that a strategic approach to energy is developed and implemented in each region. Ideally this strategic approach will be integrated as appropriate into existing strategies. We expect that it will:**

- **set out a strategic vision of the interaction between national energy policy and specific local and regional concerns;**
- **include regional targets (such as for renewables and energy efficiency) negotiated between the region and national Government;**
- **set out an action plan showing how regional bodies and local authorities intend to help to deliver objectives on energy through their various roles and functions; and**
- **act as a contribution by the region to the development of national policy.**

9.22 We expect this strategic approach to be developed by a partnership of regional chambers, RDAs, Government Offices in the Regions (GOs), local authorities and other stakeholders, such as businesses, unions and voluntary groups. Its objectives will need to be delivered by all these bodies working closely together. In the longer term elected regional assemblies will take responsibility for leading the work where they are established. **We will consult shortly on detailed proposals.**

Arrangements in London

In London, the Greater London Authority (GLA) was created in 2000, with responsibility for preparing statutory strategies in a number of areas. We believe it is too early to change current institutional arrangements in London, given that the GLA has only been in existence for two years. But we welcome the Mayor's decision to prepare a non-statutory energy strategy.

2 In regions that choose to establish them.

3 The approach builds on policy set out in the recent white paper on regional governance *Your Region, Your Choice: Revitalising the English Regions.* Cm 5511 HMSO May 2002.

9.23 RDAs' role as the drivers of regional economic development means that they can make a significant contribution to meeting the energy policy objectives set out in this white paper. In particular they will have a key role in implementing a strategic approach at regional level, and the Regional Economic Strategy will be a key driver in its development. **We will therefore strongly encourage RDAs to play a key role in the delivery of energy policy objectives at regional level. We will also support them in helping to develop their understanding of the implications of the white paper for their region and in identifying specific actions they can take to meet its aims.**

9.24 Many local authorities and regional bodies are already developing innovative initiatives and strategies that go beyond their statutory functions. In the longer term we want to see more taking such a pro-active role. **The Sustainable Energy Policy Network will have a remit further to develop the partnership with local and regional bodies on energy issues. In addition we will:**

- **establish a new beacon councils theme on sustainable energy to promote innovative local approaches on generation and demand-side measures;**
- **promote energy efficiency and the roll-out of new technologies as areas in which local authorities can consider Local Public Service Agreements;**
- **urge local authorities to give energy issues priority at a strategic level, for example, through their Community Plans and Housing Strategies, consistent with the new strategic approach to be developed at regional level;**
- **encourage local authorities to take the lead, acting as catalysts for change, developing and facilitating cross-sectoral partnerships and providing advice and encouragement;**
- **review existing guidance to Energy Conservation Authorities on complying with the requirements of the Home Energy Conservation Act;**
- **consider with the Local Government Association (LGA) whether at the next review to include energy as a shared central-local priority; and**
- **consult on arrangements to collect and make available data on the pattern of energy usage in local areas, to enable local authorities and regional bodies to target activity more effectively.**

Examples of Successful Local and Regional Initiatives

The **Northern Energy Initiative**, an independent organisation undertaking work for the regional GO, the RDA, academic institutions and business, has developed an energy strategy for the North East of England. This sets regional targets for business energy efficiency, job creation in the energy sector, renewables and CHP. It has set up support for smaller businesses, a renewable energy agency and a 'clean coal' project.[4]

The South West RDA and GO have, with local Government and business, drawn up a **Strategic Framework for the Development of Renewable Energy** in the South West. The framework addresses issues such as skills and awareness, markets for renewable energy and planning. The partners have subsequently set up a not-for-profit company 'Regen SW' to guide the development of renewables in the region and to help deliver action under the strategic frameworks.[5]

Calderdale Council has utilised funding from the local Primary Care Trust to insulate the homes of people over 60. In 2001, 711 householders had their homes improved under this scheme.

The Council is in partnership with Yorkshire Forward, the RDA in a scheme to increase the take-up of solar PV technology throughout West Yorkshire. A recent report by the Audit Commision into the work of the Calderdale Housing Energy Team said, "the work carried out by the Council on energy efficiency measures and advice is impressive".

Woking Borough Council is the only UK local authority to supply customers with electricity, heat and cooling on private wire district energy networks, using fuel cells, CHP and solar power. It also supplies energy services to homes and businesses, financed through a public/private joint venture energy services company, for which the Council gained a Queen's Award for Enterprise.[6]

Leicester City Council has a major energy efficiency housing programme which incorporates expanding the district heating system, introducing CHP, renewable energy systems and energy efficient independent boilers, and a policy for installation of new, PVCu double-glazed windows to all council housing in Leicester.[7]

4 www.umitek.com

5 www.oursouthwest.com - "Regional Sustainability" page.

6 www.lgib.gov.uk/policy/Woking_intro.htm

7 www.leicester.gov.uk

Business can help...

9.25 Many of the measures set out elsewhere in this paper are designed to encourage action by business in general, as well as by companies in the energy generation, distribution and supply industries. Companies can also encourage action themselves - by reporting publicly on their own performance for instance, and by encouraging their customers and stakeholders to act themselves. For example:

- we have already called on businesses to report on their environmental performance, including greenhouse gas emissions, and have produced guidance to help them.[8] We have put forward proposals in the Modernising Company Law white paper that would require leading companies to report on environmental issues where they are relevant to an understanding of the business. We have appointed an independent group of experts to provide guidance on how directors can assess whether an item is material and would have to be included in the annual report;[9] and
- businesses can encourage their customers to be energy efficient. Energy suppliers for example are required to offer their customers incentives to encourage energy efficiency and should provide information about practical steps to reduce energy consumption. Retailers are working within the Energy Efficiency Partnership on how to promote more efficient products to consumers.

Developing a consistent and coherent message...

9.26 Our consultations featured a strong message that there should be wider and more sustained public debate about energy policy. We can facilitate that at both national and local level. This means consulting about key decisions and reaching key stakeholders on a regular basis. It also requires an effective and consistent joining up of the messages on energy across Government.

9.27 The new Sustainable Energy Policy Network will accordingly **bring together a cross-sectoral group of interests to agree on consistent and coherent messages on the vision set out in this white paper**. It will include the Small Business Service, the Energy Saving Trust, Energywatch, the Carbon Trust, the Low Carbon Vehicles Partnership, non-Governmental organisations and business groups, the Environment Agency and others.

8 The greenhouse gas emissions guidance and other reporting guidelines are available at www.defra.gov.uk/environment/envrp/index.htm

9 The Modernising Company Law white paper is available at www.dti.gov.uk/companiesbill/index.htm

Annexes

Annex A Glossary

Term	Definition
Balancing mechanism	The mechanism used by the National Grid Company to balance the supply and demand of electricity.
Biomass	Biomass is anything derived from plant or animal matter and includes agricultural, forestry wastes/residues and energy crops. It can be used for fuel directly by burning or extraction of combustible oils.
British Electricity Trading & Transmission Arrangements (BETTA)	Arrangements to create a single wholesale electricity market for Great Britain.
Capacity Margin Instruments (CMI)	A mechanism such as a capacity obligation that requires electricity industry participants to provide a defined level of generating capacity.
Carbon capture	Removal of CO_2 from fossil fuels either before or after combustion. In the latter the CO_2 is extracted from the fluegas.
Carbon credits	A credit or permit arising from a greenhouse gas emissions reduction scheme, such as emissions trading
Carbon emissions trading scheme/carbon trading	A scheme in which greenhouse gas emissions are controlled by setting a cap on total emissions and allowing the market sector(s) to reach an economically balanced response via trading of emissions allowances. Allowances are allocated initially, perhaps through a free distribution or through an auction, and the total allocation is adjusted (capped) periodically.
Carbon storage	The long-term storage of carbon or CO_2 in the forests, soils, ocean, or underground in depleted oil and gas reservoirs, coal seams, and saline aquifers. Also referred to as engineered carbon sequestration. Carbon Capture and Storage can be referred to as CCS.
Carbon Trust	An independent not for profit company set up by the Government with support from business to encourage and promote the development of low carbon technologies. Key to this aim is its support for UK businesses in reducing carbon emissions through funding, supporting technological innovation and by encouraging more efficient working practices.

Term	Definition
CCGT	Combined cycle gas turbine - a gas fired electricity generation plant.
Climate Change Agreement	An agreement between the Government and a business user, whereby a reduced rate of Climate Change Levy is payable in return for a commitment by the user to achieve certain pre-determined targets for energy usage or carbon emissions.
Climate Change Levy (CCL)	A levy applied to the energy use of all non-domestic sectors. Subject to certain exemptions and reductions to encourage energy efficiency.
Climate Change Programme	Published in 2000, sets out the Government and Devolved Administration strategic approach to tackling Climate Change and meeting the UK's Kyoto target of a 12.5% reduction in greenhouse gas emissions from 1990 levels by 2008-2012 and the domestic goal of reducing CO_2 emissions by 20% by 2010.
CMM plant	Coal Mine Methane plants generate electricity and heat from methane that is emitted from disused coal mines.
CO_2	Carbon dioxide (a greenhouse gas).
COGENT	Sector Skills Council for the oil and gas extraction and chemical manufacturing sector.
Combined Heat and Power (CHP)	CHP is the simultaneous generation of usable heat and power (usually electricity) in a single process, thereby discarding less wasted heat.
Community Energy Programme	A £50m, 2 year capital grants programme (2002-04) offering funding, information and support to Local Authorities, Registered Social Landlords, Universities, Hospitals and other public service organisations for the refurbishment of existing and installation of new community heating schemes. Operates across UK and is jointly managed by the Energy Saving Trust and the Carbon Trust on behalf of Defra.

Term	Definition
'Decent standards'	Set by ODPM, the decent home standard is a minimum standard that all social housing in England should achieve by 2010. A decent home is one that is wind and weather tight, warm and has modern facilities. Similar standards apply in the DAs.
Defra	Department for Environment, Food and Rural Affairs.
DETR	Former Department of the Environment, Transport and the Regions.
DFES	Department for Education and Skills.
DFID	Department for International Development.
DfT	Department for Transport.
Distributed generation	Electricity generation usually on a relatively small scale that is connected to the distribution networks rather than directly to the national transmission systems.
Distribution Network Operators (DNOs)	Companies that are responsible for operating the networks that connect electricity consumers to the national transmission system and provide interconnection with embedded generation.
EAGA	The Eaga Partnership manages fuel poverty programmes on behalf of the Government and Devolved Administrations.
Embedded generation	See distributed generation.
ENERGIE Programme	An EU programme supporting research, development and demonstration aimed at delivering cost effective solutions to key energy related problems on a European scale. In particular the aims are to minimise the environmental impact of the production and use of energy and to increase the share of new and renewable energy sources in EU's energy balance. See www.dti.gov.uk/ent/energie/index.htm
Energy Charter Treaty (ECT)	A multilateral treaty to promote trade, investment and transit of energy products between Contracting Parties and sets a standard for non-discriminatory access to energy supplies.

Term	Definition
Energy Efficiency Advice Centres	Network of centres across the UK providing free, impartial and locally relevant energy efficiency advice to householders and small businesses. Call free on 0800 512012.
Energy Efficiency Commitment (EEC)	The Energy Efficiency Commitment (formerly known as Energy Efficiency Standards of Performance, EESoP) is an obligation placed on all domestic energy suppliers to achieve a specified energy saving target through the installation of energy efficiency measures in homes across Great Britain. At least 50% of the benefits are focused on disadvantaged households. A similar scheme (Energy Efficiency Levy) operates in Northern Ireland.
Energy for the Poor Initiative	An EU initiative focusing on poverty eradication in developing countries by improving people's access to adequate, affordable and sustainable energy services.
Energy intensity	Energy consumed per unit contribution to Gross Domestic Product, ie for business sectors it is the energy per unit Gross Value Added. The equivalent for the domestic sector is energy consumed per household.
Energy Research Network	A new network being developed by the Research Councils to establish interdisciplinary teams addressing all aspect of energy research (scientific, technological, social, economic and health impacts).
Energy Research Review Group (ERRG)	A group of experts set up under the chairmanship of the Government's Chief Scientific Adviser. The Group was assembled to review Government support for energy research, development and demonstration as an input to the PIU's Energy Review. The report of the Group was published on 14 February 2002.
Energy Saving Trust (EST)	The Energy Saving Trust is an independent not-for-profit organisation, set up and largely funded by the Government to manage a number of programmes to improve energy efficiency, particularly in the domestic sector.
Engineering & Physical Sciences Research Council (EPSRC)	The UK Government's leading funding agency for research and training in engineering and the physical sciences.

Term	Definition
Enhanced Oil Recovery (EOR)	Increased production of oil from an oil field, brought about by injecting gas (eg CO_2) or water to raise the oil pressure and force more oil out.
Environment Attache Network	Network of Environment Attachés at British Missions Overseas.
EU 6th Framework Programme for R&D	The European Framework programme supports R&D projects across a range of science and technologies. The 6th Framework Programme will start during 2003 with a large emphasis on renewables.
EU Data Transparency Initiative	This was announced by the Prime Minister at WSSD to increase the transparency over payments by companies to Governments and Government-linked entities, as well as transparency over revenues by these host country Governments.
EURATOM Programme	European Atomic Energy Community.
EUREKA programme	Established in 1985 by 17 countries and the European Union to encourage a bottom-up approach to technological development and to strengthen the competitive position of European companies on the world market.
European Emissions Trading Scheme	The EU emissions trading scheme, to be introduced in April 2005. See the section on 'Carbon emissions trading scheme', above.
Extractive Industries Transparency Initiative	The Extractive Industries Transparency Initiative was announced by the Prime Minister at WSSD, Johannesburg in September 2002. Its aim is to increase transparency over payments by companies to Governments and Government-linked entities, as well as transparency over revenues by host country Governments.
FCO	Foreign and Commonwealth Office.
FGD	Fuel gas desulphurisation.
Freight Facility grants	Government grants that are given to assist taking freight movements from road to rail or ship.

Term	Definition
Fuel cells	Fuel cells produce electricity from hydrogen and air, with water as the only emission. Potential applications include stationary power generation, transport (replacing the internal combustion engine) and portable power (replacing batteries in mobile phones).
Fuel poverty	The common definition of a fuel poor household is one needing to spend in excess of 10% of household income to achieve a satisfactory heating regime (21°C in the living room and 18°C in the other occupied rooms).
GLA	Greater London Authority.
Global Village Energy Partnership (GVEP)	Launched at the WSSD, this is a 10 year programme to reduce poverty and enhance sustainable development through the accelerated provision of modern energy services to those un-served or under-served.
Government Offices (GOs)	There is one Government Office in each of the 9 English regions. Their role is to act as the Government's eyes and ears in the regions, communicating the Government's messages and ensuring a regional input to the policy making process at the centre.
Greenhouse gases	Gases which contribute to global warming.
Grid Codes	The industry codes that govern the technical interface between the users of the electricity transmission systems and the transmission licence holders. Under a GB market the codes will be amalgamated into a single code.
Hybrid vehicles	Vehicles which use batteries or fuel cells as part of their power source in combination with a traditional internal combustion engine (ICE). Allows the ICE to be used with less energy loss and has overall greater efficiency.
Hydrogeneration	Electricity generation involving the use of water to turn a turbine.
Hypothecated revenue	Tax revenue that is raised for a specific expenditure purpose.
IAG	Interdepartmental analysts group.

Term	Definition
IFI	International Financial Institutions.
IMO	International Maritime Organisation.
Integrated Gasification Combined Cycle (IGCC)	IGCC plants initially gasify the raw fuel input, before passing the so-called synthesis gas through a conventional combined cycle set up. IGCCs can be designed to use a range of raw fuel inputs, including coal, oil products and wastes.
International Energy Agency (IEA)	An autonomous body, established in 1974 within the framework of the OECD, to implement an international energy programme.
IPCC	Intergovernmental Panel on Climate Change.
Joint Energy Security of Supply (JESS)	The JESS Working Group, set up in July 2001, has brought together DTI and OFGEM to monitor the security of energy supplies as part of an initiative to keep the reliability of energy supplies under ongoing review.
Kyoto Protocol	A Protocol to the UN Framework Convention on Climate Change (UNFCCC) agreed in 1997. Developed nations are required to cut overall greenhouse gas emissions by an average of 5.2 per cent below 1990 levels over the period 2008-2012.
Learning & Skills Council (LSC)	The Learning and Skills Council is responsible for funding and planning education and training for over 16-year-olds in England.
LGA	Local Government Association.
Liabilities	The costs involved in: decommissioning; the processing, long term management, storage and final disposal of waste materials and spent fuel; and the environmental remediation of nuclear sites.
Liquefied Natural Gas (LNG)	When natural gas is cooled to a temperature of approximately -160°C at atmospheric pressure it condenses to a liquid called liquefied natural gas (LNG). Natural gas is composed primarily of methane (typically, at least 90%), but may also contain ethane, propane and heavier hydrocarbons.

Term	Definition
Liquefied Petroleum Gas (LPG)	Gas usually propane or butane, derived from oil and put under pressure so that it is in liquid form. Often used to power portable cooking stoves or heaters and to fuel some types of vehicle, eg some specially adapted road vehicles and forklift trucks.
Low Carbon Vehicle Partnership	An action and advisory group, set up early in 2003, to bring together all stakeholders in the UK's shift to clean low carbon vehicles and fuel.
Major Infrastructure Projects	Projects such as interconnectors, which typically involve a substantial investment over a number of years to construct and bring into operation.
MARKAL energy model	A model whose main characteristic is the processing of detailed bottom-up data in order to meet pre-determined energy demand at the lowest cost. Its emphasis is on analysis of the longer term potential for new technology uptake.
Micro-CHP	CHP (as above), but in very small scale, typically below 5kW electrical output, applications (eg in the residential and commercial sectors). It is likely to operate in place of a domestic central heating boiler.
MtC	Million tonnes of Carbon.
Mtoe	Million tonnes of oil equivalent.
Market Transformation Programme (MTP)	A Government programme that aims to bring forward products, systems and services which do less harm to the environment, using less energy, water and other resources. The MTP provides strategic support to a growing set of 'product' policies that aim to encourage resource efficiency through supply-chain measures such as reliable product information, raising minimum standards and encouraging best practice.
MW	Mega Watt - a measure of power, one million watts.
MWh	Mega Watt hour, one thousand kWh. A 1 MW power-generating unit running for 1 hour produces 1 MWh of electrical energy.

Term	Definition
NEPAD	The New Partnership for Africa's Development.
New Electricity Trading Arrangements (NETA)	New Electricity Trading Arrangements - in England and Wales these arrangements replaced 'the pool' from 27 March 2001. The arrangements are based on bi-lateral trading between generators, suppliers, traders and customers and are designed to be more efficient, and to provide greater choice for market participants.
New HEES (Wales)	A scheme for the provision of energy efficiency improvements, in Wales. The 'Basic' scheme offers a range of insulation and basic heating improvements. 'HEES +' offers gas or electric central heating and is available to households containing lone parents, sick or disabled persons and those over the age of 60 in receipt of Income Support, Housing Benefit, Council Tax Benefit and income based Job Seekers Allowance.
ODPM	Office of the Deputy Prime Minister.
OECD	Organisation for Economic Cooperation and Development.
OFGEM	Office of Gas and Electricity Markets.
OPEC	Organisation of Petroleum Exporting Countries.
Photovoltaics (PV)	The direct conversion of solar radiation into electricity by the interaction of light with the electrons in a semiconductor device or cell.
PIU	Performance and Innovation Unit (now the Strategy Unit).
PPG	A Planning Policy Guidance note for England. PPG22 covers renewable energy and the planning system. The guidance notes are in the process of being replaced by Public Planning Statements (PPS).
RCEP	Royal Commission on Environmental Pollution.
Regional chambers	In each English region outside London there is a voluntary multi-party body with members drawn from local government and the social, economic and environmental sectors in the region.

Term	Definition
Regional Development Agencies (RDA)	The agencies aim to co-ordinate regional economic development and regeneration, enable the English regions to improve their relative competitiveness and reduce the imbalances that exist within and between regions.
Regional Selective Assistance (RSA)	RSA is a discretionary grant which provides assistance towards projects with fixed capital expenditure over £500,000 and which will create or safeguard employment in assisted areas.
Registered Social Landlords (RSLs)	RSLs are non-profit making bodies run by voluntary committees who provide rented accommodation at an affordable cost. Some also provide homes for sale through special schemes to help people on lower incomes become homeowners.
Renewable energy	Renewable energy includes solar power, wind, wave and tide, and hydroelectricity. Solid renewable energy sources consist of energy crops, other biomass, wood, straw and waste, whereas gaseous renewables consist of landfill gas and sewage waste.
Renewable Energy and Energy Efficiency Partnership (REEEP)	An international partnership to promote the growth of renewable energy and energy efficiency systems, launched by the UK at the WSSD.
Renewables Obligation	The obligation placed on licensed electricity suppliers to deliver a specified amount of their electricity from eligible renewable sources.
Renewables Obligation Certificate (ROC)	Eligible renewable generators receive Renewable Obligation Certificates (ROCs) for each MWh of electricity generated. These certificates can then be sold to suppliers. In order to fulfil their obligation, suppliers can either present enough certificates to cover the required percentage of their output, or they can pay a 'buyout' price of £30 per MWh for any shortfall. All proceeds from buyout payments are recycled to suppliers in proportion to the number of ROCs they present.
Regional Economic Strategies (RES)	Produced by RDAs with partners and stakeholders in their region. These documents set out the framework of regional economic priorities which guide the activities of organisations promoting regional economic development, and are revised at least every three years.

Term	Definition
Science & Technology Attaché Network	Network of Science & Technology Attachés at British Missions Overseas.
Sector Skills Councils (SSCs)	SSCs are independent, UK wide organisations developed by groups of influential employers in industry or business sectors of economic or strategic significance, to tackle the skills and productivity needs of their sector throughout the UK.
Sector Skills Development Agency (SSDA)	The SSDA funds, supports and champions the new UK-wide network of influential employer-led SSCs to promote effective working between sectors.
Small and Medium-Sized Enterprise Energy Advice Centre	The Energy Savings Trust together with the Carbon Trust has launched a new service called Action Energy to give advice to Small and Medium-Sized Enterprises.
SMEs	Small and Medium-Sized Enterprises.
Sustainable Development Commission	The Commission's main role is to advocate sustainable development across all sectors in the UK, review progress towards it and build consensus on the actions needed if further progress is to be achieved.
UK Emissions Trading Scheme	A scheme which started in April 2002, under which 34 organisations have voluntarily taken on legally binding obligations to reduce their greenhouse gas emissions against 1998-2000 levels, delivering over 4 million tonnes of additional CO_2 equivalent emission reductions in 2006.
UKCS	United Kingdom Continental Shelf - areas of seabed and subsoil over which UK exercises sovereign rights of exploration and exploitation of natural resources (popularly known as 'North Sea' but geographically wider than that).
UN Framework Convention on Climate Change (UNFCCC)	The international framework established in 1992 to tackle the issue of climate change and greenhouse gas emissions. The UNFCCC aims to prevent dangerous man-made climate change and commits developed countries to taking the lead in tackling climate change.

Term	Definition
UNDP	United Nations Development Programme.
USDOE	United States Department of Energy.
Warm Deal (Scotland)	A scheme for the provision of energy efficiency improvements, in Scotland, administered by Eaga Partnership for all housing stock and Local Authorities for their own stock.
Warm Front (England)	A scheme for the provision of energy efficiency improvements, in England, providing grants to households with children, who are on income related benefits. Larger grants are available for households whose occupants are 60 and over and receive an income related benefit.
Warm Homes (Northern Ireland)	A scheme for the provision of energy efficiency improvements, in Northern Ireland, designed to increase access to energy efficiency advice, including grant availability, among families with young children from low income families, particularly those from single parent families. It also aims to reduce the incidence of fuel debt within the target group, improve comfort levels and prevent cold related illnesses.
World Summit on Sustainable Development (WSSD)	An international summit, held in Johannesburg in August/ September 2002, to reaffirm the international community's commitment to sustainable development.
WTO	World Trade Organisation.

Annex B References

Author/lead department	Date	Description	Web link
BP	2002	BP Statistical Review of World Energy	www.bp.com/centres/energy2002
Defra	2002	Framework for Sustainable Development on the Government Estate	www.sustainable-development.gov.uk/sdig/improving/index.htm
Defra	2000	Warm homes and Energy Conservation Act	www.hmso.gov.uk/acts/acts2000/20000031.htm
Defra	Ongoing	Market Transformation Programme	www.mtprog.com
DETR	2000	Transport 2010 - the Ten Year Plan	www.dft.gov.uk/trans2010/
DETR	1999	A better quality of life; a strategy for sustainable development for the UK.	www.sustainable-development.gov.uk/UK_strategy/index.htm
DETR	2000	Climate Change Programme	www.defra.gov.uk/environment/climatechange/cm4913/index.htm
DETR, Scottish Executive, National Assembly for Wales and the Department of the Environment in Northern Ireland	2000	Ther Air Quality strategy for England, Scotland, Wales and Northern Ireland Working Together for Clean Air	www.defra.gov.uk/environment/airquality/strategy/pdf/forward.pdf
DFID	2002	Energy for the Poor	www.dfid.gov.uk
DfT	2002	Airport capacity in the South East: Consultation Document	www.aviation.dft.gov.uk/consult/airconsult/se/mainconsult/15.htm

Author/lead department	Date	Description	Web link
DfT, DTI, Defra and HMT	2002	Powering Future Vehicles: The Government Strategy	www.roads.dft.gov.uk/cv/power/html/index.htm
DTI	2000	Conclusions in response to the public consultation - New and Renewable Energy: Prospects for the 21st century	www.dti.gov.uk/renew/condoc/policy.pdf
DTI	2003	UK Energy Sector Indicators	www.dti.gov.uk/energy/inform/energy_indicators/index.shtml
DTI	2002	Digest of UK Energy Statistics	www.dti.gov.uk/energy/inform/dukes/index.shtml
DTI	2001	Productivity and Enterprise: A World Class Competition Regime	www.dti.gov.uk/cp/whitepaper/cm5233.pdf
DTI	2002	The Report of the Nuclear Skills Group	www.dti.gov.uk/energy/nuclear/skills/nsg.shtml
DTI	2002	The Government's Manufacturing Strategy	www.dti.gov.uk/manufacturing/strategy.htm
DTI	2002	The Modernising Company Law white paper	www.dti.gov.uk/companiesbill/index.htm
DTI	2000	Utilities Act	www.hmso.gov.uk/acts/acts2000/20000027.htm
DTI and Defra	2003	Fuel Poverty Advisory Group First Annual Report (for England)	www.dti.gov.uk/energy/consumers/fuel_poverty/fuel_adv_grp/reports.pdf
DTI and Defra and the Devolved Administrations	2003	The UK Fuel Poverty Strategy 1st Annual Progress Report	www.dti.gov.uk/energy/consumers/fuel_poverty/index.shtml

Author/lead department	Date	Description	Web link
DTI and Defra and the Devolved Administrations	2001	UK Fuel Poverty Strategy	www.dti.gov.uk/energy/consumers/fuel_poverty/strategy.shtml
DTI and OFGEM	2003	Joint Energy Security of Supply Working Group reports	www.dti.gov.uk/energy/domestic_markets/security_of_supply/jessreport2.pdf
Eyre, Fergusson and Mills	2002	Fuelling Road Transport - Implications for Energy Policy - study for DFT	www.roads.dft.gov.uk/cv/fuelling/index.htm
Future Energy Solutions	2003	Options for a low carbon future - phase 2	www.dti.gov.uk/energy/whitepaper/index.shtml
Government Economic Service		Estimating the Social Costs of Emissions, Working paper 140	www.hm-treasury.gov.uk/documents/taxation_work_and_welfare/taxation_and_the_environment/tax_env_geswp140.cfm
House of Lords Select Committee on the European Union	2002	Energy Supply: how secure are we?	www.parliament.the-stationery-office.co.uk/pa/ld200102/ldselect/ldeucom/82/8201.htm
IEA	2002	World Energy Outlook 2002	www.worldenergyoutlook.org/
IEA	2002	Renewables Information 2002	www.iea.org/stats/files/ren2002.pdf
Ilex	2002	Quantifying the system costs of additional renewables in 2020	www.dti.gov.uk/energy/developep/080scar_report_v2_0.pdf

Author/lead department	Date	Description	Web link
Intergovernmental Panel on Climate Change	2001	Third Assessment Report	www.ipcc.ch
National Grid Company	2002	NGC Seven Year Statement and Updates 2002	www.nationalgrid.com/uk/
NERA	2002	Security in Gas and Electricity Markets	www.dti.gov.uk/energy/whitepaper/index.shtml
NERA	2002	Electricity Markets and Capacity Obligations	www.dti.gov.uk/energy/whitepaper/index.shtml
ODPM	2002	Your Region, Your Choice: Revitalising the English Regions	www.regions.odpm.gov.uk/governance/whitepaper
ODPM	2002	Planning and Compulsory Purchase Bill	www.publications.parliament.uk/pa/cm200203/cmbills/012/2003012.htm
Office of Science and Technology	2001	Report of the Chief Scientific Adviser's Energy Research Review Group	www.ost.gov.uk/policy/issues/csa_errg/main_rep.pdf
OFGEM	2003	Initial thoughts on both the principles for developing the regulatory... when the next price control is implemented (open letter).	www.ofgem.gov.uk/temp/ofgem/cache/cms attach/1259_dnoletter_jan.pdf
Opito	1999	Skills Foresight, The Industry Survey	no web link
Performance and Innovation Unit	2002	Energy Review	www.cabinet-office.gov.uk/innovation/2002/energy/report/index.htm

Author/lead department	Date	Description	Web link
Performance and Innovation Unit	2001	Renewable Energy in the UK	www.piu.gov.uk/2001/energy/Renewener.shtml
Ricardo Consulting Engineering Ltd	2002	"Carbon to Hydrogen" Roadmap for Passenger Cars: A Study for DfT and DTI	www.roads.dft.gov.uk/cv/power/carbon/index.htm
Royal Commission on Environmental Pollution	2000	22nd Report: Energy - The Changing Climate	www.rcep.org.uk/newenergy.html
Scottish Executive	2001	Housing (Scotland) Act	www.hmso.gov.uk/si/si2002/20022264.htm
Strategy Unit	2002	Waste Not, Want Not	www.piu.gov.uk/2002/waste/report/index.html
Trade and Industry Committee	2002	Security of Energy Supply	www.parliament.the-stationery-office.co.uk/pa/cm200102/cmselect/cmtrdind/364/36402.htm

Printed in the UK for the Stationery Office limited
on behalf of the Controller of Her Majesty's Stationery Office
126648 02/03 RYE 7861

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ISBN 0-10-157612-9

STEPS TAKEN TO ADDRESS NAVIGATIONAL SAFETY IN THE CONSENT REGIME FOR ESTABLISHMENT OF WIND FARMS OFF THE UK COAST[1]
8 July 2003

Introduction

1. The following procedures are recommended for all offshore wind farms planned, constructed and operated under United Kingdom authority. It is intended that they are followed within the consents process under section 34 of the Coast Protection (CPA) 1949 with section 36 of the Electricity Act (EA) 1989; and when maritime aspects of the Transport and Works Act (TWA) 1992 are being assessed. As regards the EA, maritime concerns are focussed upon the burying of cables taking power to the shore. The above routes also need a license under section 5 of the Food and Environment Protection Act (FEPA) 1985.

2. The MCA reserves the right to vary or modify these standards on the basis of experience and in accordance with internationally recognised standards in the interest of safety of life at sea and protection of the marine environment.

3. The development of wind farms off the UK coast necessitates establishing a clear consent regime to deal with effects that would be possibly detrimental to the safe navigation of vessels and shipping. The consent regime must take account of national standards and local factors that could influence the establishment of a wind farm. International aspects of the regime need also to be considered.

Actions required of wind farm developers

4. The consent regime shall require developers to take the following steps;

4.1 Undertake an up to date traffic survey of the area concerned. This must include not only all commercial traffic, but also fishing vessels and pleasure craft. The traffic survey should be properly representative of traffic in the area and is likely to be of at least four weeks duration, taking account of any seasonal variation in traffic patterns. Consultation with appropriate clubs, representative organisations for recreational craft and fishing federations will provide a more complete picture of seasonal variations.

4.2 Conduct a safety risk assessment of the relative siting, alignment and orientation of wind farm structures with vessel traffic flows in the particular area. The risk assessment should be used as the basis against which the following options can be assessed:

(i) no wind farm in the area;
(ii) a wind farm with conditions such as the establishment of an emergency management system including a shutdown procedure and a safety zone around the wind farm; or
(iii) a wind farm with no conditions.

4.3 Identify in the risk assessment should be tailored to the area concerned and should demonstrate the following items and factors:

(i) knock-on changes to traffic patterns arising through vessels' re-routeing to avoid the wind farm, including subsequent any new areas of convergence, bunching,

[1] Includes United Kingdom internal waters, territorial waters and in any future area for their development under UK jurisdiction established beyond territorial waters (a renewable energy zone).

choke points and the creation of new points where crossing traffic converges or directs marine traffic closer towards hazards, so endangering craft, their cargoes, crews and passengers;

(ii) increase in risk of collision between vessels and wind farm structures (including turbine blades) under all reasonably foreseeable weather and tide height conditions or between vessels under all conditions [2];

(iii) limitation on the use of such sites or adjacent waters for non-transit purposes. e.g. fishing, day cruising, racing, aggregate dredging, anchoring etc.;

(iv) co-operation with local and national search and rescue authorities, taking into consideration the types of vessels and equipment that would used and search patterns;

(v) national requirements and procedures employed for turbine shutdown and how rotor blade rotation and power transmission might best be controlled by emergency services (standards copied at Annex 1);

(vi) emergency use of the structures by persons seeking refuge and rescue balanced against reasonable levels of security;

(vii) foreseeable interference with shipboard systems particularly radio systems, such as caused by reflections or phase-changes with respect to aids to navigation, ship/shore radar and Automatic Identification Systems (AIS);

(viii) problems for rescue services, including obstructions to use of helicopters and lifeboats;

(ix) preserving access for servicing of adjacent aids to navigation;

(x) radar reflections, blind spots and shadow areas created by structures;

(xi) sonar interference caused by the structures and the generators;

(xii) electromagnetic fields created by the generators or cabling, affecting compasses and other navigational systems;

(xiii) visual blocking view of the coastline and other navigational features such as buoys and lights;

(xiv) tidal streams that could cause vessels to set into danger in the event of power or steering failures;

(xv) other adverse effects on the set and rate of tide;

(xvi) siltation, deposition of sediment or scouring created by the structures such as to affect the navigable depth of water; and

(xvii) wind masking, turbulence or sheer created around structures and impacting on vessels nearby.

4.4 Demonstrate through the risk assessment the increased risk to navigation from the proposed siting of the wind farm and the effectiveness of proposed protective measures designed to mitigate that additional risk. Examples of protection measures for ship's routeing purposes are given in Annex 2.

5. In considering the results of the developer's risk assessment the competent authority (the MCA) will assess whether the site for the wind farm represents an acceptable increase in navigational risk to enable granting of the consent, made conditional if necessary on the developer taking and maintaining specified protective measures.

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[2] A minimum safe (air) clearance shall be maintained between sea level conditions at mean high water springs (MHWS) and the turbine blades that:

.1 is suitable for all vessel structures of vessels involved in current maritime traffic flows and operations; and additionally

.2 is no less than 18 metres.

The proposed wind farm could pose problems at high water that do not exist in low water conditions.

6. In assessing the need for protective measures and safety zones with reference to the traffic surveys, risk assessment (referred to above) and expert opinion, developers may include recommendations for the vessel safe operating distances from the structures. These may include the size and types of vessels and those activities that may continue to operate and exercise rights of navigation.

7. In navigable waters, if the appropriate protective measures include safety zones around structures and subsea cables the safety of navigation and any persons involved in working on the structures shall be the primary validation. Existing users' rights and activities may be interfered with only so far, as:

.1 is necessary for purpose of safety, with avoidance of the blanket use of 'Exclusion Zones'; and

.2 when Protection measures are consistent with the principles of Article 60 of the UN Convention on the Law of the Sea (UNCLOS) (copied at Annex 3).

8. An application for consent should also indicate the contractors' proposals on how to bring evidence of breach against any navigational advice or requirement established in association with protective measures, to the attention of MCA or other relevant body to take action as appropriate. The application should also outline the methods to be employed by the developer for promulgating necessary safety information to vessels that operate in the vicinity of the wind farm [3].

9. In the event of protective measures being required, the MCA will advise the developer whether international agreement for them is necessary. When so advised, the developer will be required to support and co-operate with the MCA at the International Maritime Organization (IMO) for the introduction of such measures. (Recognised standards for the establishment of safety zones and safety of navigation around offshore installations and structures are contained in IMO Resolution A.671(16))

10. Consent granted by the MCA shall indicate that the proposal meets suitable national and international standards for the navigational safety of wind farm developments, providing that any conditions specified in the consent are met.

11. Additional consideration of safety factors not included in this document will be required for projects that utilise offshore wave, tidal power or any future offshore structures necessary for renewable power generation.

12. National points of contact on navigation safety issues:

Navigation safety, pollution at sea and search and rescue concerns - MCA

Aids to navigation, in England and Wales - Trinity House
In Scotland – The Commission of Northern Lighthouses
In Northern Ireland – The Commissioners of Irish Lights

Safety on the offshore structures - The Health and Safety Executive
Charting and hydrographic information – The United Kingdom Hydrographic Office
Within the limits of the harbour authority – Local harbour authorities

[3] Developers will promulgate information (e.g. footprint diagrams) on any detrimental affects to propagation of ship and shore radio, aids to navigation, radar and Automatic Identification Systems (AIS).

Annex 1

STANDARDS AND PROCEDURES FOR WIND TURBINE GENERATOR SHUTDOWN IN THE EVENT OF A SEARCH & RESCUE, COUNTER POLLUTION OR SALVAGE INCIDENT IN OR AROUND A WIND FARM

Design Requirements

The wind farm will be designed and constructed to satisfy the following design requirements for emergency rotor shut-down in the event of either a search and rescue (SAR), counter pollution or salvage operation in or around a wind farm:

1. All wind turbine generators (WTGs) will be marked with clearly visible unique identification characters. The identification characters shall each be illuminated by a low-intensity light visible from the sea at a suitable distance away from the structure. The size of the identification characters in combination with the lighting shall be such that under normal conditions of visibility, as to be clearly readable by an observer stationed 3 metres above sea level under all known tidal conditions, equal to twice the range at which significant interference with VHF communications is predicted. It is recommended that lighting for this purpose be hooded or baffled so as to avoid unnecessary light pollution or confusion with navigation marks.
2. All WTGs will be equipped with control mechanisms that can be operated from the Central Control Room of the wind farm.
3. The WTG control mechanisms will allow the Control Room Operator to shut down any or all of the WTGs within 60 seconds of initiating the shutdown procedure. Shutdowns shall be limited to those WTGs in the immediate vicinity of an emergency and for as short a period as is safely practicable to do so.
4. The WTG control mechanisms will allow the Control Room Operator to fix and maintain the position of the WTG blades:

   .1 in the case of three-bladed turbines to within 5 degrees of either the 12/4/8 or 10/2/6 o'clock positions ("Emergency Shut-Down Positions"); or

   .2 in the case of two-bladed turbines, either in the 12/6 or 3/9 o'clock positions; and

   .3 as determined by the Maritime Rescue Co-ordination Centre or Maritime Rescue Sub Centre (MRCC/SC).
5. Nacelle hatches should be capable of being opened from the outside. This will allow rescuers (e.g. helicopter winch-man) to gain access to the tower if tower occupants are unable to assist and when sea-borne approach is not possible.
6. Access ladders for use in emergency shall be placed in the optimum position taking into account the prevailing wind, wave and tidal conditions. In many cases this it likely to be on the down-weather side of the WTG tower.

Operational Requirements

7. The Central Control Room will be manned 24 hours a day.
8. The Central Control Room operator will have a chart indicating the WTG identification numbers and the GPS positions of each of the WTGs in the wind farm.
9. All MRCC/SCs will be advised of the contact telephone number of the Central Control Room.

10. All MRCC/SCs will have a chart indicating the GPS position of each of the WTGs in all wind farms.

Operational Procedures

11. Upon receiving a distress call or other emergency alert from a vessel who is concerned about a possible collision with a WTG or is already close to or within the wind farm, the MRCC/SC will establish the position of the vessel and the identification numbers of any WTGs which are visible to the vessel. The position of the vessel and identification numbers of the WTGs will be passed immediately to the Central Control Room.
12. The control room operator will immediately initiate the shut-down procedure for those WTGs as requested by the MRCC/SC, and will maintain the WTG in the appropriate shut-down position again as requested by the MRCC/SC until receiving notification from the MRCC/SC that it is safe to restart the WTG.
13. The communication and shutdown procedures must be tested satisfactorily at least twice a year.

*Precise dimensions to be determined by the height of lights and necessary range of visibility of the identification numbers.

Annex 2

Examples of additional Marine Routeing Safety Measures to establish in association with wind farms during operation

Measures are to be consistent with international standards contained in SOLAS Chapter V, IMO Resolution A.572(14) and Resolution A.671(16).

A – Lower risk wind farms

All of the structures situated in areas with less than 3 metres of water below chart datum away from all shipping routes, channels, recognised fairways and significant levels of other maritime activity including recreational craft and fishing vessels.

Associated Routeing Measures:

Dissemination and promulgation of information through radio-warnings and notices to mariners, including details of the nature of activities that should not be carried out within a specified range of the structures and any adverse effects upon navigational systems.

B – Medium risk wind farms

All of the structures situated in areas with less than 7 metres of water below chart datum away from all shipping routes, channels, recognised fairways, but may be associated with other maritime activity including recreational craft and fishing vessels.

Associated Routeing Measures:

Dissemination and promulgation of information through radio-warnings and notices to mariners.

Safety zones up to 50 metres from the structures with monitoring by radar and a continuous watch by multi-channel VHF including DSC. Appropriate measures to notify and provide evidence of infringements of safety zones.

C – Higher risk wind farms

Structures situated in areas with more than 7 metres of water below chart datum close to or across shipping routes, channels and recognised fairways.

Associated Routeing Measures:

Dissemination and promulgation of information through radio-warnings and notices to mariners.

Safety zones up to 50 metres from the structures with monitoring by radar, AIS transponders at the extremities and a continuous watch by multi-channel VHF including DSC.

Use of a guardship or guardships to provide a visible indication of the limits of a safety zone, to alert other mariners when they may be running into danger and to share in the task of monitoring the safety of the wind farm.

Area to be avoided (ATBA) around the whole of the wind farm and up to 500 metres from the extremities preventing access to a range of craft (e.g. vessels of over 300 GT, of over 25 metres in registered length or carrying dangerous or polluting goods) and marine activities.

Continuous vessel monitoring/information service using radar/AIS and radar by appropriately training staff.

Closure of nearby shipping routes where there are suitable alternatives (subject to consultation)

Other routeing measures will be considered where warranted by traffic patterns. Appropriate procedures in place to notify and provide evidence of infringements ATBAs or safety zones.

3920

Annex 3

Article 60 UNCLOS
Artificial islands, installations and structures in the exclusive economic zone

1. In the exclusive economic zone, the coastal State shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of: (a) artificial islands; (b) installations and structures for the purposes provided for in article 56 and other economic purposes; (c) installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.
2. The coastal State shall have exclusive jurisdiction over such artificial islands installations and structures, including jurisdiction with regard to customs fiscal health, safety and immigration laws and regulations.
3. Due notice must be given of the construction of such artificial islands, installations or structures, and permanent means for giving warning of their presence must be maintained. Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization.
Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed.
4. The coastal State may, where necessary, establish reasonable safety zones around such artificial islands, installations and structures in which it may take appropriate measures to ensure the safety both of navigation and of the artificial islands, installations and structures.
5. The breadth of the safety zones shall be determined by the coastal State, taking into account applicable international standards. Such zones shall be designed to ensure that they are reasonably related to the nature and function of the artificial islands, installations or structures, and shall not exceed a distance of 500 metres around them, measured from each point of their outer edge, except as authorized by generally accepted international standards or as recommended by the competent international organization. Due notice shall be given of the extent of safety zones.
6. All ships must respect these safety zones and shall comply with generally accepted international standards regarding navigation in the vicinity of artificial islands, installations, structures and safety zones.
7. Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.
8. Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf.

Alliance to Protect Nantucket Sound

396 Main St., Suite 2 Hyannis, MA 02601 508-775-9767
www.saveoursound.org

003920

February 23, 2005

Ms. Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Re: NAE-2004-338-1:
Comments on the DEIS for the Proposed Cape Wind Energy Plant

Dear Ms. Adams:

Please find enclosed the comments of the Alliance to Protect Nantucket Sound on the Draft Environmental Impact Statement for the proposed Cape Wind Energy Plant. The comments consist of five separate volumes. Volume I addresses legal issues and why the proposed project is not in the public interest, while Volume II addresses the technical deficiencies in the document. The remaining three volumes include supporting exhibits. Thank you for your consideration of these remarks.

Very truly yours,

Susan Nickerson
Executive Director,
Alliance to Protect Nantucket Sound

003920

Alliance to Protect Nantucket Sound

Comments on the
U.S. Army Corps of Engineers
Draft Environmental Impact Statement
for the
Cape Wind Project

Volume 1

February 24, 2005

003920

COMMENTS OF THE

ALLIANCE TO PROTECT NANTUCKET SOUND

ON THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE
PROPOSED CAPE WIND ENERGY PLANT

VOLUME I

February 24, 2005

003920

Executive Summary – Alliance to Protect Nantucket Sound Comments on Draft EIS for Proposed Cape Wind Associates Energy Plant

CONCLUSIONS

The Cape Wind Associates (CWA) energy plant DEIS is seriously flawed, the review process is legally insufficient; and the proposed project is not in the public interest. The DEIS overstates the benefits of the proposed plant and understates the negative impacts and risks. In addition, the proposed project fails under many state and federal environmental laws. In light of these factors and others, the Corps must deny the Cape Wind application outright. If the Corps intends to continue its review, it must, at the very least, remedy the tremendous holes and glaring deficiencies in the existing review through a supplemental EIS.

The CWA project can never be approved at the federal, state, and local levels. Rather than continuing to pit the mutually compatible environmental goals of ocean conservation and renewable energy against each other, the Corps and CWA need to agree to a consensus-based process that removes Nantucket Sound and similar areas from risk while facilitating and expediting the review and approval of properly-sited renewable energy projects.

BACKGROUND

The Alliance to Protect Nantucket Sound (APNS) has assembled a team of experts to prepare comments on the DEIS. The APNS review of the DEIS is based upon the principles of protecting Nantucket Sound and its multiple public interest values by promoting a national system of ocean governance, establishing a comprehensive regional program for the development of wind energy and other forms of "clean energy", implementing an effective approach for combating air pollution and greenhouse gas emissions, and securing full cooperation between the Commonwealth and the federal government to protect and manage the ocean areas off the coast of Massachusetts.

THE REVIEW PROCESS IS FLAWED

The DEIS presents a biased discussion of the permit application and promotes the project, rather than analyzing it critically and objectively under federal and state laws, and it suffers from serious technical deficiencies and errors.

In addition to the serious flaws in the DEIS, the procedure that the Corps has used to review the proposed wind energy plant is not adequate. The process conflicts with the goals of achieving comprehensive ocean governance and the development of a renewable energy program. As supported by the recent decision of the First Circuit Court of Appeals in *Alliance to Protect Nantucket Sound v. U.S. Department of the Army*, there is no legal authority to allow private use of Nantucket Sound for wind energy development. CWA does not have permission from the federal government to use the Outer Continental Shelf (OCS) for its proposed development, and the Corps has no power to give it away. The Corps is required to address this issue as part of its permit application review, and its refusal to do so at this point in time is illegal and a disservice to the public. Nor is the Corps the appropriate agency to conduct the review of a project of this nature. The Corps itself has admitted it lacks expertise on these energy and offshore land issues. There are no standards to guide agency decision-making; there has been no programmatic review of offshore wind resources to identify preferred locations; and there has been no effort to comply with well-established principles of ocean governance.

THE PROPOSED PROJECT IS NOT IN THE PUBLIC INTEREST

The CWA application fails the public interest test under which section 10 permits must be judged. The purported benefits of the project are overstated, while the negative impacts are minimized, incorrectly analyzed, or ignored. Consequently, CWA's permit application must be denied.

The impacts of the proposed project are overwhelmingly negative. A review of each of the public interest factors indicates that the project weighs heavily against the public interest. Only one factor, energy, can be regarded as positive, and even this factor is speculative and of minimal benefit. The energy this project would produce is not needed now, and would be generated at a location where it is not of any benefit for the foreseeable future. The air quality benefits are unquantified and unexplained or insignificant. The same is true for greenhouse gas emission reductions. By contrast, there are numerous serious negative impacts. Fourteen of the public interest factors have negative effects, and many of these are very significant. These negative effects greatly outweigh the minor positive impacts.

As shown in the following matrix, the proposed project results in negative impacts under virtually every relevant factor included in the public interest. The few factors for which the project has neutral or slightly positive consequences do not overcome the extreme negative effects. For this reason, the Corps must deny CWA's application.

FIGURE 1. SUMMARY OF PUBLIC INTEREST FACTORS

§ 320.4 FACTOR	PUBLIC INTEREST EFFECT			
	Positive	Not Applicable	Insignificant	Negative
General Environmental Concerns-Air Quality	✓*		✓*	
Energy Needs	✓**		✓**	
Conservation				✓
Economics				✓
Aesthetics				✓
Wetlands				✓
Historic Properties				✓
Fish and Wildlife Values				✓
Flood Hazards		✓		
Flood Plain Values		✓		
Land Use				✓
Navigation				✓
Shore Erosion and Accretion		✓		
Water Supply and Conservation		✓		
Water Quality				✓
Safety				✓
Food and Fiber Production			✓	✓
Mineral Needs				✓
Considerations of Property Ownership				✓
The Needs and Welfare of the People				✓

*Section 10 does not have a specific factor to address the purported air quality benefits upon which CWA stakes its claim of project benefits. For purposes of this review, air quality issues are considered under the "general environmental factor." Although we have assigned this factor a positive impact, this is done recognizing the speculative and insignificant nature of those benefits.

**As discussed in detail in these comments, the energy benefits of this project also are vastly overstated.

SUMMARY OF PUBLIC INTEREST FACTORS

General Environmental Concerns - Air quality Impacts

CWA has attempted to justify its proposed project on purported improvements to air quality, reductions of harmful emissions, and combating global warming. However, the Corps and CWA have applied a conceptually flawed air pollution analysis that seriously overstates the benefits of the project. CWA and project supporters rely on air benefits as the principal justification for the proposed action. To the extent these benefits exist at all in certain limited areas, they are inconsequential.

The DEIS' most basic air quality claim is that construction of the proposed plant would lead to reductions in emissions of health-damaging pollutants from other New England power plants. The DEIS estimates the value of the resulting health benefits at $53 million per year. This is the largest single benefit claimed for the project, exceeding even the claims made for the value of cheaper electricity.

The DEIS makes this claim by first assuming that the proposed project will generate 1,489,200 megawatt hours of electricity a year. The DEIS claims, in effect, that the proposed project will "back out" an equal amount of electricity from fossil generation.

In fact, if the proposed project were constructed, it would not cause any reduction in these emissions, because of the nation's air pollution regulatory system that the DEIS does not mention. Moreover, even if such a back-out were to take place – and it will not – the amount of the back-out and any associated benefits would be dramatically smaller than the DEIS indicates.

The DEIS claim rests on a basic misunderstanding of how the air pollution control system already works to control power plant emissions in New England and around the country. These controls take the form of "cap and trade" programs. Such programs forbid the covered power plants, in the aggregate, to emit more than a defined "cap" amount of pollution. The government issues "allowances" to emit that amount and allocates them to individual power plants. No power plant can legally emit pollutants that it does not hold allowances to cover.

A cap and trade program makes clear that constructing the proposed project would not "back out" any emissions. Under a cap approach, whether that increased demand is met by the proposed project or by a fossil plant, emissions will remain the same.

Even taken on its own terms, the back-out analysis in the DEIS overestimates the amount of power the proposed project would generate and the amount of pollution that would be backed out.

The DEIS takes two different and inconsistent approaches to calculating the emission reduction benefits associated with the fossil generated power it claims the proposed project will back out. At some points, the DEIS calculates this amount by referring to the emissions rates of the marginal contributor to the New England power pool, as calculated by ISO-NE for the year 2000.

However, in making the key computation of $53 million dollars in annual health benefits stemming from backed-out pollution, the DEIS abandons this approach, and assumes instead that the proposed project would back out power from the Brayton Point and Salem Harbor plants, two of the dirtiest suppliers in the entire system.

There is no justification for this second approach. If any emissions are backed out, they will be emissions from the marginal producer. Correcting for this error by using the DEIS's own marginal emission rates would reduce the health benefits claimed by the DEIS by about two-thirds.

Moreover, even this figure is materially too high. Marginal emissions rates will decline steadily over time as air pollution requirements get tighter. Simply using 2002 data instead of the 2000 numbers in the DEIS reduces the calculated health benefits to $7 million.

General Environmental Concerns – Greenhouse Gas Emissions and Climate Change

The greenhouse benefits are not sufficiently large to justify the construction of the proposed project. The project's direct contribution to greenhouse gas reduction would be miniscule and temporary. The proposed project is one of the least cost-effective ways of reducing greenhouse gas emissions.

The DEIS claims that "once online the [Cape Wind] project could displace equivalent energy production from fossil plants that would otherwise annually emit on the order of 1,000,000 tons of carbon dioxide." Once again, the Corps has relied on outdated information provided by CWA in their original submittal, without acknowledging or incorporating more recent information that was readily available.

Over 7,400 MW of generating capacity have been added to the NEPOOL power supply in the past three years. This represents over 20% of the total generating capability within New England. Most of this capacity is highly efficient, natural gas-fired, combined cycle, generating facilities with state-of-the-art emission control

equipment. The addition of this generation has had a significant impact on the marginal emissions rates in New England.

Based on the most recently available data, the numbers presented in the DEIS to support the CWA project are grossly overstated, as shown in the table below:

Comparison of Emission Reduction Calculations
DEIS Numbers vs Revised Values Based on Latest Available Data
(Tons/Year)

Emissions Reductions	Carbon Dioxide	Sulfur Dioxide	Nitrogen Oxides
As Presented in DEIS	1,108,039	4,606	1,415
Based on Most Recent (2003) Data	877,883	1,489	521
Most Recent Data as a % of DEIS Data	79.2%	32.3%	36.8%

These values represent but a fraction of total annual world greenhouse gas emissions. Since global warming is equally caused by all emissions of greenhouse gasses world-wide, this figure describes the proposed plant's potential contribution to global warming control. The air pollution and global warming benefits the DEIS claims for the proposed project are exaggerated by at least an order of magnitude. The proposed project would not reduce air pollution materially. Such an insignificant contribution cannot be justified in light of the negative effects on a unique and environmentally sensitive area such as Nantucket Sound.

Energy Needs

The proposed project is not required to meet future regional energy needs. While the DEIS claims there is a need for power in 2008, updated and geographically relevant analysis shows that there is no need for power in New England until the 2013-2105 timeframe. By that time, other technologies and forms of renewable energy would come on line (including deepwater offshore wind) that would make the sacrifice of Nantucket Sound unnecessary.

There are several problems with the analysis put forth in the DEIS. First, the 1.9% growth rate in electricity demand quoted in the DEIS refers to growth rate for electricity for the United States, not the growth rate of demand in New England, which is projected at only 1.3% over the ten-year analysis period of the CELT report.

Second, the DEIS refers to a report written by LaCapra Associates in 2002, in which it conducted an analysis of the need for power in the New England region based on the NEPOOL CELT report from the spring of 2002. Since that time, there have been two more CELT reports published by NEPOOL.

Third, LaCapra made adjustments to the Available Generating Capacity based on their own judgments of unit retirement schedules with no documentation of the assumptions used to make these judgments. By prematurely retiring these units in their analysis, it appears that LaCapra has created an artificial need for power in 2008.

Using the most recent NEPOOL CELT report issued in April 2004 and LaCapra's own criteria of 15% as the minimum reserve margin requirement before any additional generation is needed in New England, the next incremental MW of capacity is not needed until 2013. Assuming funding of Demand Side Management (DSM) programs continues beyond 2010 (a highly probable event), the need for power would be extended beyond 2013.

The bottom line is that, according to NEPOOL's 2004 CELT report data and applying LaCapra 15% reserve margin, there is no need for power until well into the next decade. With added emphasis on DSM, this need could be extended well beyond the 2015 time frame. In consideration of these factors, the proposed project will have no impact whatsoever on the energy needs of the region.

Conservation

It is clear that a negative finding on the conservation factor is required by Nantucket Sound's status as a sanctuary under Massachusetts law; its qualification as a federal marine protected area (MPA) under Executive Order 13158; and its qualifications for national marine sanctuary status. Under Massachusetts law, the very features of Nantucket Sound that would be *destroyed* by the CWA energy plant are specifically protected.

Economics

The DEIS grossly understates the economic impact of the project. The proposed project would have minimal impact, if any, on the region's consumption of fossil fuels and only minor reductions in air pollution. At the same time, it would result in the degradation of an ecological asset that plays a key role in the area's economy, substantial costs imposed on many different groups, and significant economic risks. The costs and risks of the project outweigh the potential benefits by a vast margin.

The DEIS does not account for all of the direct costs of the proposed project, e.g. the loss of revenue for the use and occupation of public lands and waters. The costs for major repairs and decommissioning also are underestimated in the DEIS.

Output overestimated:

The proposed project will likely produce less electricity than estimated and any electricity it produces probably would not displace electricity derived from fossil fuels, but rather electricity derived from other renewable sources of energy: biomass, landfill gas, or wind resources elsewhere. Consequently, the cost-savings for consumers and the human-health benefits would be far less than estimated.

The DEIS is expected to weigh the project impacts against its anticipated benefits. The two largest stated project benefits—a claimed $25 million in reduced power costs and $53 million in public health benefits—are directly proportional to the assumed facility power output – i.e., 1,489,200 MWh. To quantify benefits, the DEIS relied exclusively upon the project proponent's own power output estimates and studies while making no attempt independently to validate their claims.

CWA project performance is not justified using existing wind performance data. The output used to compute benefits (1,489,200 MWh) is equivalent to an annual capacity factor of 36.3% (if 468 MW) to 40.5% (if 420 MW). This performance claim far exceeds current operating experience at existing wind farms. Recent operating experience of existing New England land-based wind projects is Searsburg, Vermont, at 20.4% in 2003; Hull, Massachusetts, at 26.9% for project lifetime; Princeton, Massachusetts at 2.6% for 2002; and the more recent Madison, New York, wind project at 19.2% in 2003. The DEIS provides no evidence to support the claim for a 35-50% better performance than the Hull, Massachusetts, project located along the Massachusetts coastline that may have somewhat similar prevailing offshore wind and icing conditions.

While there are no U.S. offshore wind facilities, such facilities exist in Europe. The Danish offshore wind turbine performance in 2003 averaged only 29.4% in 2003 and 31.9% for the first 11 months in 2004. The Danish project most similar to the proposed project, the 160 MW Horns Rev wind plant in the North Sea, averaged only a 24.1% capacity factor in the first 11 months of 2004.

The existing operating data from both U.S. onshore and European offshore projects are unable to support the use of an average project capacity factor above 30 percent. The EIS contains no onsite wind tower data to confirm the developer's much higher power output estimate, despite the fact that CWA constructed a so-called data tower for that very purpose.

Overall, the combination of the historical wind turbine operating data and the projections using existing local wind datasets suggests that a lower project capacity

factor of 25-30% (1,025,000-1,230,000 MWh) should have been used to calculate wind project impacts, not 36% (1,489,200 MWh).

Tourism, fishing, and property values:

The proposed project is likely to have significant, negative impacts on the value of recreational activities and on the area's tourism industry, with tourists perhaps reducing annual spending by $57 - $123 million.

It is also likely to affect the fishing industry negatively. One hundred thirty turbines, located in an area where currents are strong, would pose a significant hazard and cause the industry to avoid the area altogether or incur additional costs and risks to fish among the turbines.

A broader review of all the relevant evidence indicates the project is expected to lower property values, both directly, by degrading the scenic amenities of properties with views of Nantucket Sound, and indirectly, by depressing the area's recreation/tourism industry.

The DEIS also does not consider economic risks associated with the proposed project, such as financial risks, ecological risks, and navigation risks.

Overstated cost savings:

The DEIS suggests that one of the largest benefits of the proposed project would be a $25 million annual savings for New England customers based upon a March 2002 LaCapra study. The analysis is built upon an overly optimistic power output (1,486,000 MWh) and the assumption that the wind project output would have significant effect on marginal costs during peak demand prices. A review of the wind data and operating experience suggests that the proposed project output would be far less than assumed in the analysis. In addition, the project output during the high cost peaking summer demand periods was often minimal to none at all. The combination of these factors suggests that the March 2002 LaCapra study significantly overstated the "annual savings."

Second, the simplified DEIS analysis does not reflect the net costs since it excludes the large subsidies being paid by the taxpayers and ratepayers that offset these purported "annual savings." The LaCapra calculations exclude the taxpayer subsidized federal tax credits, the ratepayer subsidized renewable energy credits, state-subsidized corporate tax exemption, and local tax exemptions. According to the Beacon Hill Institute (BHI), public subsidies will be made available in the form of a federal production tax credit with a present value estimated at $98 million, state green

credits estimated at a value of $125 million and accelerated depreciation that has a present value effect of approximately $58 million for a total of $281 million.

Aesthetics

The DEIS fails to conduct an analysis of the aesthetic impacts of the proposed project. The Corps has failed to follow its own guidance in this regard. It limits the scope of aesthetic impacts to historic properties. In addition, the DEIS fails to evaluate the impact to the culture and economy of Cape Cod and the Islands of changing the dominant views from a natural seascape to an enormous industrial facility. It is widely recognized that tourists and recreationists are attracted to the aesthetics of Cape Cod's seascape and cultural heritage associated with the traditional maritime lifestyle. The DEIS recognizes that the aesthetic impacts to all the properties that it considers are "adverse," even to properties that are as far away as 15 miles. It is therefore reasonable to anticipate that these adverse effects will be detrimental to the tourism and recreation-related economy of the Cape and Islands.

Wetlands

The CWA wind-energy plant will have negative effects on wetlands through work associated with cable installation. If proper precautions are taken, this impact will not be significant, but it will be negative. More significant are the impacts associated with the use of erosion mats (or rip-rap if the mats are not effective) around the monopoles. These mats are designed to trap sand and will result in alteration of the sea floor configuration, as well as impacts to benthic species covered by the mats. Wetlands impacts are equated with section 404 jurisdiction, which now applies to the project site itself and the installation of the benefits as a result of the clarified and expanded state boundaries.

Historic Properties

The DEIS demonstrates that the proposed project will violate federal historic preservation laws and weigh heavily against the public interest by causing immitigable adverse impacts to certain historic properties and failing to consider potential impacts to others.

The proposed project will directly and adversely affect two historic properties of exceptional national significance to the United States that have been designated by the Secretary of the Interior as National Historic Landmarks ("NHLs"): the Nantucket Historic District and the Kennedy Compound. Under section 110f of the National Historic Preservation Act (NHPA), the Corps must minimize harm to both of these properties to the "maximum extent possible." In this case, the only way to meet this

obligation is to mandate that the CWA project be constructed outside of Nantucket Sound.

Second, the Corps failure to consider visual effects to numerous historic properties violates section 106 of NHPA. That provision requires federal agencies to consider visual effects to any property "included in *or eligible for* inclusion in the National Register." At the request of APNS, a qualified historian has identified at least 23 historic properties not assessed by the Corps, including two properties included on the National Register, one property that has been determined eligible for inclusion, and at least 20 properties that are eligible for inclusion on the National Register.

Fish and Wildlife Values

Even a cursory review of the impacts of the proposed project on fish and wildlife resources leads to the conclusion that the project will significantly adversely impact wildlife. The proposed development will substantially alter important habitat for many species and result in ongoing disturbance to the ecosystem. Although the DEIS has not adequately evaluated a number of these impacts, and therefore cannot reach any rational conclusion regarding the scope of the potential impacts, it is nonetheless apparent that the project will have serious negative impacts on fish and wildlife values. Consequently, the public interest in fish and wildlife values is not served by approval of this project.

Land Use

The CWA wind energy plant will have negative public interest impacts on land use. There is a profound negative land use impact derived from the fact that the project would be located on the federally-controlled, public trust lands and waters of Nantucket Sound. CWA does not have, and cannot obtain, any property right or authorization for this purpose. It will "use" this federal "land," in violation of the public trust, with no compensation to the U.S. Treasury or right to do so. CWA would exclude other parties from making use of this public land and water resource, again with no right or authority to do so. It would be in trespass on federal property, and create land/water use conflicts with many other parties who seek to use the Sound for recreation, fishing, navigation, transportation, aesthetic enjoyment, sand dredging for beach replenishment, and other activities. There also will be numerous adverse effects under the land use factor as determined by the Cape Cod Commission Act. These deficiencies and the flaws in the DEIS have caused the Cape Cod Commission staff to call for a supplemental EIS.

Navigation 003920

The proposed plant is incompatible with the marine transportation needs of the area, creates unacceptable risks to the environment and shipping, and the DEIS analysis is fatally flawed. The proposed Horseshoe Shoal, Tuckernuck Shoal and Handkerchief Shoal sites are at odds with common international practice and threaten disruption of Nantucket Sound's Main Channel. The negative impacts of this project to marine transportation and public safety are significant and broad, and they pose unnecessary and unacceptable risks to cruise liner, ferry, oil transport, fishing and recreational vessels and their users.

A review of existing offshore wind facilities reveals that, in contrast to the Nantucket Sound proposals, offshore wind facilities worldwide have been purposely located miles away from any active shipping channels. The Horseshoe Shoal proposal is placed directly adjacent (800 feet) to the Nantucket Sound Main Channel. In this location, no protection is afforded, as is repeatedly claimed in the DEIS, to prevent large ship and tanker collisions with the many turbines to be built along the Main Channel.

The DEIS conveys a false sense of safety and security about the risks that the turbines pose to ships, boats, passengers and to the environment. It dismisses the real risks presented by vessels blown off-course, whose machinery or steering fails or whose operators make mistakes. The DEIS also claims that "physical water depth restrictions" limit the potential for a vessel to collide with a turbine. In fact, nearly 80% of the turbines are in deep enough water to be struck by the deepest vessels that routinely use the Main Channel.

The DEIS provides no discussion or analysis to establish a baseline of pollution incidents and consequences within the vicinity of the proposed wind facility. The DEIS provides no significant information or data concerning the impact that construction, operation and decommissioning of the facility will have on the frequency, size or consequence of marine pollution incidents for the proposed sites or to Nantucket Sound. In contrast a recently conducted independent study which examined the result of a probable tankship/turbine collision revealed extensive contamination adversely impacting and killing especially sensitive biological resources in the Nantucket Sound ecosystem resulting from such an occurrence. This study clearly indicates the need for additional spill impact analysis by the project proponent to facilitate a more realistic environmental impact review by the public and local, state and federal governments.

Water Quality

The impacts of the project to water quality have not been adequately addressed. The discharge of a pollutant to waters of the United States requires a National Pollutant Discharge Elimination System permit. The location of the project also means that the discharge must comply with EPA's Ocean Discharge Guidelines. The Guidelines require that EPA determine whether a proposed discharge will result in "unreasonable degradation of the marine environment." The DEIS does not adequately discuss the issue of wastewater discharges or the Ocean Discharge Guidelines. As noted above, this failure, combined with the oil spill risk created by the project compels a negative public interest finding.

Safety

The DEIS for the proposed project inadequately addresses a number of issues that either directly or indirectly affect the public's safety and well-being in the region. These include extreme weather impacts on the proposed facility; worker safety and facility access; and exposure to oil and hazardous substances. The proposed project may present safety hazards to employees/contractors of the proposed offshore facility. Transit to and from the facility may become difficult, and docking in heavy seas and winds may present significant safety hazards. Discussion of effects of hurricane/extreme storm events on public safety for on and offshore alternatives are not addressed in DEIS.

Further, given substantial ice occurrence in Nantucket Sound, the DEIS should address issues such as the likely rafting of ice around the offshore structures, the immediate proximity of the proposed plant to the Main Channel, and the risks posed by ice thrown from rotor blades.

An independent analysis conducted on potential spill impacts from either: 1) a tanker collision with a turbine, or 2) from the transformer and diesel oils stored on the transformer platform, indicates that a significant oil spill event in Nantucket Sound would directly impact the Sound, Cape Cod, Martha's Vineyard, Nantucket, Vineyard Sound, proximal portions of the Atlantic Ocean and the Elizabethan Islands. Significant direct and indirect adverse impacts to the rich biological, cultural and recreational resources of the area would occur in the event of such a spill, potentially resulting in additional substantial impacts to public safety (through contaminated seafood ingestion and dermal exposure to spilled oil) and the regional economy (i.e., through adverse impacts to the fishing industry, aquaculture and tourism).

Food and Fiber Production

It is likely that the proposed project will have a negative impact on food and fiber production. The construction and operation of the proposed plant will cause a localized disturbance to marine life. There will almost certainly be a reduction in productivity over the 24-square mile area and beyond. Turbidity plumes and sedimentation resulting from construction activities, scour, and anchor sweep have been greatly underestimated. The likely impact of this disturbance is that juvenile and adult fish will move away from the plumes would leave the area. Others would suffer lethal or sub-lethal effects. Seemingly localized impacts would cause population changes accumulating up the food chain with less and less predictable results higher up the trophic scale.

The fisheries community that has evolved at Horseshoe Shoal is dependent upon an open, sandy shoal environment. Conversion to a habitat dominated by high relief structures with their associated sounds, vibrations, and locally changed water flow patterns would disrupt the current finfish communities. Lacking anti-fouling protection, the turbines would quickly become encrusted with barnacles, seaweed, mollusks, etc. These 130 mini-ecosystems would likely attract some species and be avoided by others. The net effect is to cause a negative effect on fishing productivity.

Mineral Needs

The CWA wind energy plant will conflict with mineral needs. The Town of Barnstable has filed for the rights to dredge for sand on Horsehoe Shoal. This sand is needed for replenishment of eroding beaches. This proposed activity would be conducted under existing regulations, which clearly create a right for Barnstable to do so. The CWA project, which would interfere with this lawful dredging activity, can obtain no rights to use Horsehoe Shoal. In addition, the massive wind energy project would impede these dredging rights by removing areas from access, creating navigation problems, and interposing on any rights awarded to the Town.

Considerations of Property Ownership

The resources of Nantucket Sound are the public trust property of the general public, and they cannot be taken over by this private development company. The affected OCS area is under the control of the United States and cannot be alienated without an act of Congress. Moreover, CWA seeks to avoid paying anything for the use of this property, by providing competitive bidding, rents or royalties. There could be no more dramatic examples of a *negative* property ownership.

The project will also negatively affect private property rights. This project will result in a large decline in property values for all landowners included within the viewshed

of the CWA energy project. This fact is documented in the economic analysis prepared by the Beacon Hill Institute, where it is documented that property values will decline an estimated $1.35 billion.

The Needs and Welfare of the People

The fact that the previous factors are *overwhelmingly negative* means that "the needs and welfare of the people" will be harmed by the CWA wind energy plant.

This conclusion is bolstered by the strong negative impact this project will have on other factors such as national security. The effects of this project on national security are significantly adverse, particularly given the interference that this project will have on domestic security detection systems.

The DEIS overlooks the military PAVE PAWS early warning radar system, located on Otis Air Force Base, which is the backbone of the east coast terrestrial air defense system from Canada to Florida. PAVE PAWS is located approximately 20 miles from the primary and alternative wind farm sites. The negative effect of wind farms already noted in the U.K. may compromise the integrity of the east coast air defense system.

In addition, public recreation will be seriously harmed by the project. The affected area is popular for use by recreational boaters, and will be removed from such use. In addition, the scenic value of the entire affected recreational resource will be seriously degraded by the project.

As shown by this discussion, the public interest factors weigh heavily against this project. When they are considered together, it is clear that the permit application fails the public interest test by an overwhelming margin.

OBJECTIONS BY STATE REQUIRE PERMIT DENIAL

The necessity of denying the permit application is even more compelling when the Commonwealth's objections are taken into account. Governor Romney has expressed the Commonwealth's clear opposition to this project. The views of affected states are accorded special deference under both Corps regulations and the President's recent Executive Order on Facilitation of Cooperative Conservation.

As has been evident from the start of the review process, the official position of the state is one of total opposition to the project. Governor Romney, Attorney General Reilly, Senator Kennedy, and Congressman Delahunt, the Representative for the

region, have each, on numerous occasions, expressed their opposition to the proposed project. For example, Governor Romney testified at a Corps' hearing on December 7, 2004, in which he stated, "I've seen wind farms, and they are not pretty. If we want them in Massachusetts, we'll build them, but not here on Nantucket Sound." At that same meeting, Attorney General Reilly commented, "I support renewable energy, but there is a right and a wrong way and this is the wrong way. . . . This is no wind farm; it's a power plant." Each of these state officials has expressed their opposition in formal letters as well. As such, the Corps must take those comments into account as "a reflection of local factors of the public interest." The Corps must defer to the position of the State and affected local governments and deny the application. The Corps' Section 10 regulations require that the permit be denied due to state opposition.

THE PROJECT FAILS UNDER MANY FEDERAL AND STATE ENVIRONMENTAL LAWS

The application fails under a host of environmental laws, including the Coastal Zone Management Act, Endangered Species Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, National Historic Preservation Act, the federal public trust doctrine, and State laws, including the Massachusetts Ocean Sanctuaries Act, the Energy Facilities Siting Board statute, the Massachusetts Waterways statute, the Cape Cod Commission Act, and the Massachusetts Coastal Zone Management program. These legal violations are additional reasons that the permit application must be denied.

THERE ARE SIGNIFICANT PROCEDURAL DEFICIENCIES UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

There are numerous federal and state law procedural deficiencies that afflict the Corps' review of the proposed project. The DEIS is insufficient because the applicant has played an improper role in virtually every aspect of the NEPA process; the DEIS is not objective; the Corps has failed to conduct a programmatic EIS; the DEIS relies on inadequate and incomplete data; and the DEIS fails to consider the proper state boundaries.

THE ALTERNATIVES ANALYSIS IS INADEQUATE

The DEIS fails to review alternatives adequately. It does not establish an appropriate EIS purpose and need statement, uses an illegally constrained alternatives review, and fails to identify and adequately address project impacts.

The DEIS purpose and need statement is crafted narrowly to advance the applicant's profit-making goals, not the public interest, and violates NEPA. The Corps' overly restrictive purpose and need statement compromises the entire review of the CWA project and invalidates the DEIS. The narrow terms of that statement, particularly the limitation of a "utility-scale renewable facility (200 MW or larger)" designed to deliver electricity solely to "the New England grid" are intended to produce a specific result, i.e., approval of the applicant's preferred alternative on Horseshoe Shoal. In fact, the record of power projects in New England demonstrates that there is no basis for equating the "utility scale" limitation with 200 MW; the record for such projects in New England is 20 MW. This is the threshold used by the American Wind Energy Association. By impermissibly restricting purpose and need, the Corps also has limited the review of alternatives to only a very few sites and only one technology. The DEIS fails to consider any technology other than wind in any area other than the immediate vicinity of Nantucket Sound. Such an approach violates NEPA.

The Corps' alternative analysis is further invalidated by the improper screening criteria used to identify alternatives. With respect to project risk, the Corps does not account for the differential risk of onshore wind versus offshore wind. Most of the wind projects in the world are onshore. Onshore technology is an established and reliable technology, whereas offshore technology is much less mature and is still evolving.

The criteria used by the Corps are applied without regard to trade-offs that exist between different elements of the criteria. For example, land based sites can often be economic with less wind than offshore, yet the same wind class screen is used for both.

The Corps criteria also do not consider the issue of economic viability. Failed plants are not in the public interest. Thus, the Corps needs to review the developer's financial plan for the project sufficiently to ensure that the project is viable. This is particularly relevant since there is such a large inventory of projects that, while not bankrupt, are sufficiently non-performing that their owners have turned them over to the bank. The public has a right to know this information and comment on it especially since a public trust resource is at stake.

A second aspect of economic viability deals with the issue of what happens in the event the plant needs to be removed, either as a result of a premature event or at the end of its useful life. The Corps must ensure that the developer has made separate arrangements so that when and if the plant needs to be dismantled, there are sufficient funds to do this, which were separate from the funds related to building and operating the plant.

The screening criteria also are flawed because they rely upon outdated information on transmission capacity and make false assumptions on the nature of purported "bottlenecks" in the system.

By failing to use a valid set of screening criteria, the Corps failed to consider at least eight alternative sites, still under the unlawfully narrow purpose and need statement of the DEIS. These sites easily fit within NEPA requirements for reasonable alternatives, and the failure to account for them renders the DEIS invalid.

If a proper purpose and need statement is developed: to provide a feasible utility-scale clean energy, project (i.e., greater than 20 MW) within the Northeast (Canada/United States) and Mid-Atlantic region, for which the public interest advantages outweigh the costs to the public interest, a reasonable set of alternatives is identified. These alternatives include offshore wind projects (including deepwater sites that would be available before there is a regional energy need), onshore wind projects, other forms of renewable energy, and clean energy projects that provide substantially similar or better benefits for the public.

THE WIND ENERGY PLANT WILL DESTROY THE SANCTUARY STATUS AND MARINE PROTECTED AREA VALUES OF NANTUCKET SOUND

All state waters within Nantucket Sound are designated as a marine sanctuary under State law. The purpose of that designation is to protect the very values of the Sound that would be destroyed by the project, including its scenery and overall ecology. The unique nature of the Sound also has caused it to be placed on the list of areas for consideration as a federal marine sanctuary. The designation of the state waters qualifies the entire Sound for MPA status under Presidential Executive Order 13158. For the Corps to comply with that Order, it would have to deny this permit application because it will cause harm to the protected values of the Cape and Islands Ocean Sanctuary.

The DEIS is deeply flawed in its complete failure to address the special status of Nantucket Sound: as a sanctuary under State law, an area that meets the federal definition of an MPA, and an area that is subject to National Marine Sanctuary

review. This failure leaves the Sound vulnerable to projects like this one, which will destroy the very values that give the Sound these features deserving of protection. This failure is especially inappropriate, since it is possible to have *both* under a proper decision-making process: protected status for the Sound, and offshore wind in properly-sited locations.

NEITHER THE CORPS NOR CAPE WIND HAS ADDRESSED THE CLARIFIED STATE BOUNDARIES

It has now been announced that the Massachusetts boundary extends into the project site. This is a self-executing, factual determination that carries with it full Massachusetts regulatory jurisdiction and the state's power plant prohibition. It also makes the lands and waters within the clarified boundary part of the Cape and Island Ocean Sanctuary. These are major charges that both the Corps and CWA knew were forthcoming, yet the DEIS is silent on the issue. The failure to address the application of Massachusetts jurisdiction to this project requires a supplemental EIS.

THE DEIS IS FILLED WITH TECHNICAL DEFICIENCIES

The Alliance commissioned over 30 technical consultants to review the DEIS. In the short, and inadequate, public review period provided by the Corps for the multi-volume DEIS, these consultants developed over 400 pages of comments on the deficiencies of the document. The message of these comments is clear: the DEIS is a result-oriented, technically deficient review that does not meet professional or legal standards. Further review of the CWA proposal requires a supplemental EIS.

CONTENTS

Volume I

I. INTRODUCTION

On November 21, 2001, Cape Wind Associates ("CWA") applied to the U.S. Army Corps of Engineers ("Corps") for a permit to construct the world's largest offshore wind energy power project on Horseshoe Shoal in Nantucket Sound. CWA proposed this power plant for federal waters. The developer's chosen site has been under consideration at various times for national marine sanctuary status, beginning in 1980 and remaining today on the list of candidate areas. In the surrounding state waters, which are designated as a State marine sanctuary, the Commonwealth of Massachusetts prohibits the development of power plants and other structures that would alter or endanger the ecology or appearance of Nantucket Sound.

The sole source of authorization requested by CWA to build its power plant is a section 10 permit under the Rivers and Harbors Act ("RHA"), 33 U.S.C. § 403, a law enacted more than a century ago to authorize permits for impediments to navigable waters. The project itself would consist of 130 417-foot tall wind turbines laid out in a grid spanning 24-square miles of Nantucket Sound. Each wind turbine would contain 190 gallons of oil and would connect, through an estimated 100+ miles of transmission cables, to a 100-foot high, 20,000-square foot transformer platform containing 40,000 gallons of dielectric cooling oil. The electricity generated would be transmitted to shore by two 12.2-mile long cables from the transformer platform, making landfall at New Hampshire Avenue in Yarmouth, Massachusetts.

On November 9, 2004, the Corps released the draft environmental impact statement ("DEIS") on the CWA proposal and announced its availability for a public review period of 60 days. 69 Fed. Reg. 64919. The DEIS also is intended to fulfill the Environmental Impact Report ("EIR") review requirements of the Massachusetts Environmental Policy Act ("MEPA").[1] In response to requests from numerous parties, the Corps extended the comment period by 45 days, to February 24, 2005. 69 Fed. Reg. 70257-01. By letter dated December 3, 2004, from CWA to the Executive Office of Environmental Affairs ("EOEA") Secretary Ellen Roy Herzfelder, the MEPA deadline was also extended to February 24, 2005.

This document, set forth in 2 volumes with 2 volumes of exhibits, represents the comments of the Alliance to Protect Nantucket Sound ("APNS") on the DEIS. The mission of APNS is to protect Nantucket Sound in perpetuity through conservation, environmental action, and opposition to inappropriate industrial or

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[1] For ease of reference, the joint DEIS/DEIR document will be referred to as the DEIS.

commercial development that would threaten or negatively alter the coastal ecosystem. In addition, APNS supports formal designation of Nantucket Sound as a National Marine Sanctuary and a federal marine protected area. Because the wind energy plant directly conflicts with these goals, APNS is opposed to the permit application.

Concerned citizens living on Cape Cod and the Islands established APNS in 2002 to meet the serious threat the CWA project presents to numerous conservation, cultural, economic, historic, scenic and public trust values. To carry out this responsibility, APNS has been engaged in all aspects of the debate over the CWA proposal. Through this involvement, APNS has demonstrated that the CWA proposal lacks legal authority under federal and state law and represents a poor policy choice that produces insignificant benefits while causing serious adverse impacts to a wide range of environmental and public interest values important to the Nantucket Sound region.[2]

In December, 2004, APNS received "Soundkeeper" status from the nationally renowned Waterkeeper Alliance. The purpose of the Waterkeeper program is three-fold: 1) to support and empower member Waterkeeper organizations to protect communities, ecosystems and water quality; 2) to promote the Waterkeeper model for watershed protection worldwide; and 3) to advocate for issues common to Waterkeeper programs. This distinguished certification will assist APNS in pursuing its broad objectives for the long-term preservation of Nantucket Sound.

While the specific mission of APNS is to ensure the protection of Nantucket Sound for present and future generations, the organization also is engaged in activities dealing with broader environmental initiatives. To carry out its larger goals at a local level, APNS has initiated collaborative efforts with the United States Environmental Protection Agency ("EPA"), stepped up efforts to establish Nantucket Sound as a National Marine Sanctuary, established a marine educational program under its Soundkeeper initiative, and developed a legal agenda to pursue issues of national importance that affect not only Nantucket Sound, but many other coastal regions in the country as well.

On a national level, APNS is actively engaged in a number of initiatives to enhance the protection of coastal and ocean areas. For example, APNS is sponsoring a legal analysis related to the application of the Migratory Bird Treaty Act ("MBTA")

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[2] APNS hereby incorporates by reference in the administrative record all documents it has previously submitted to the Corps regarding the proposed project. *See* Ex. 1 (indicating that documents filed with the Corps would be included as part of the administrative record).

to ocean areas within United States jurisdiction beyond three miles from shore. APNS is coordinating with other concerned environmental organizations on this issue. In addition, APNS is assisting in the coordination of efforts to promote the establishment and conservation of marine protected areas, with an emphasis on ensuring that state-designated areas achieve full attention under federal law. APNS has testified on federal legislation related to the regulation of non-oil and gas activities in ocean areas and has drafted comprehensive legislation for this purpose. It also has commented on the U.S. Oceans Commission report on reform of federal ocean conservation initiatives and the comparable effort at the state level, Governor Romney's Ocean Management Task Force.

In keeping with its broad mission, APNS has been a strong advocate of taking steps to address air pollution in the Cape Cod region and the climate change problem caused by greenhouse gases. To address these problems, APNS has commented in support of the federal programmatic EIS for onshore wind energy development, produced an energy conservation and efficiency brochure that is posted on its website, published information in its newsletter to inform the publication's 30,000 recipients of specific measures that can be taken on an individual basis to conserve energy, and worked with the Cape Light Compact to bring greater public awareness to that organization's energy conservation programs and the ways in which the public can access and benefit from them.

APNS's efforts focus on ensuring that the environmental problems that affect Nantucket Sound and the ocean environment are addressed through comprehensive, meaningful, and effective programs developed and integrated on a regional and national basis. Marine ecosystems like Nantucket Sound cannot be conserved and properly managed in isolation from the surrounding environment or on a piecemeal, *ad hoc* manner dictated by political boundaries. Coordination among all affected stakeholders, including federal, state and local governments, is essential. In taking this position, APNS endorses the findings and recommendations of the Pew Oceans Commission in 2003, and the U.S. Commission on Ocean Policy in 2004, both of which call for the establishment of a comprehensive ocean governance program that would ensure common-sense management of marine resources.

The APNS review of the DEIS, as reflected in these comments, is based upon these principles. It is APNS's goal to protect Nantucket Sound and its multiple public interest values by promoting a national system of ocean governance, establishing a comprehensive regional program for the development of wind energy and other forms of "clean energy", implementing an effective approach for combating air pollution and greenhouse gas emissions, and securing full cooperation between the Commonwealth and the federal government to protect and manage the ocean areas off the coast of Massachusetts.

CWA's proposed wind plant and the procedure that has lead to the issuance of the DEIS conflict with all of these goals. The DEIS is seriously flawed. It presents a biased discussion of the permit application and promotes the project, rather than analyzing it critically and objectively under federal and state laws. It also suffers from numerous serious technical deficiencies and errors. As a result, this DEIS cannot be used as the basis for decision on the CWA proposal, and it must be rejected by the Corps under 33 C.F.R. 325, App. B.8(f)(2)(ii) (requiring Corps' approval of information provided by an applicant or its consultant to satisfy the requirements of the National Environmental Policy Act ("NEPA") for an EIS). The DEIS is so deficient that the Corps cannot make a legally justified decision on the application, other than permit denial, without the issuance of a supplemental EIS.

In addition to the serious flaws in the DEIS, the procedure that the Corps has used to review the proposed wind energy plant is not adequate. The process conflicts with the goals of achieving comprehensive ocean governance and the development of a renewable energy program. As an initial matter, there is no legal authority to allow private use of Nantucket Sound for wind energy development. Nor is the Corps the appropriate agency to conduct the review of a project of this nature. There are no standards to guide agency decision-making; there has been no programmatic review of offshore wind resources to identify preferred locations; and there has been no effort to comply with well-established principles of ocean governance. The inadequacy of the Corps' review procedure for offshore wind energy has prompted the U.S. Commission on Ocean Policy to conclude:

> The Section 10 process stands in stark contrast both to the well established DOI regulatory program for onshore wind energy and, in the marine setting, to the robust regulatory program for offshore oil and gas that has developed under the OCSLA (Outer Continental Shelf Lands Act). Using the Section 10 process as the primary regulatory vehicle for offshore wind energy development is inadequate . . . .

Commission on Ocean Policy, An Ocean Blueprint for the 21st Century Final Report of the U.S. Commission on Ocean Policy, 318 (2004) ("Ocean Commission Report").

In these comments, APNS demonstrates not only that the DEIS is technically flawed and that the review process is legally insufficient, but also that the CWA application fails the public interest test under which section 10 permits must be judged. The purported benefits of the project are overstated, while the negative impacts are minimized, incorrectly analyzed, or ignored. Consequently, CWA's permit application must be denied.

In addition, the application fails under a host of other environmental laws, including the Coastal Zone Management Act ("CZMA"), Endangered Species Act ("ESA"), Marine Mammal Protection Act ("MMPA"), Migratory Bird Treaty Act ("MBTA"), National Historic Preservation Act ("NHPA"), the federal public trust doctrine, and State laws, including the Massachusetts Ocean Sanctuaries Act ("MOSA"), the Energy Facilities Siting Board ("EFSB") statute, the Massachusetts Waterways statute, and the Massachusetts Coastal Zone Management program. The project also must fail under the review conducted by the Cape Cod Commission. These legal violations are additional reasons that the permit application must be denied.

Following the Introduction, Section II of the APNS comments presents a summary of the critical legal defects in treating a section 10 RHA permit as sufficient for developing the proposed wind plant on outer continental shelf ("OCS") lands. Section II explains why the proposed plant substantially infringes on federal property interests and is therefore unlawful without Congressional authorization. In addition, Section II explains why the public interest test is not only an insufficient mechanism for administering an offshore wind energy program, but that it also precludes the Corps from permitting the proposed project without Congress first authorizing the use of OCS lands for wind energy purposes, or alternatively, without conditioning construction on Congressional authorization of offshore wind development and complete compliance with new implementing regulations.

Section III addresses why, even if Congress had authorized offshore wind energy development, this particular project cannot survive the public interest test the Corps must conduct under section 10. Section III summarizes the findings of the APNS review and presents them under the Corps' section 10 public interest test. As shown by the matrix included in Section III.B, the proposed action results in negative impacts under virtually every relevant factor included in the public interest, as set forth in 33 C.F.R. § 320.4. The few factors for which the project has neutral or slightly positive consequences cannot overcome the extreme negative effects. Again, for this reason, the Corps is compelled to deny CWA's application.

Because CWA has attempted to justify its proposed project in substantial part on purported improvements to air quality, reductions of harmful emissions, and combating global warming, APNS devotes Section IV to refuting CWA's claims in this regard. The Corps and CWA have applied a conceptually flawed air pollution analysis that seriously overstates the benefits of the project. CWA and project supporters rely on air benefits as the principal justification for the proposed action. To the extent these benefits exist at all in certain limited areas, they are inconsequential.

Section V addresses the substantive deficiencies of the application under other federal laws, as well as under Massachusetts law. As noted above, these laws include the CZMA, ESA, MBTA, MMPA, NHPA, the MOSA, and Chapter 91.

Section VI discusses the numerous federal and state law procedural deficiencies that afflict the Corps' review of the proposed project. Several NEPA defects are discussed in this section, including: 1) the improper role the applicant has played in virtually every aspect of the NEPA process; 2) the failure of the Corps to conduct a programmatic EIS; and 3) the failure of the Corps to consider the proper state boundaries.

Section VII addresses the failure of the DEIS to review alternatives adequately, including: 1) the failure to establish an appropriate EIS purpose and need statement; 2) the illegally constrained alternatives review; and 3) the failure to identify and adequately address project impacts.

Section VIII discusses the general substantive deficiencies in the DEIS, including the failure to account for technical uncertainties and the failure to address cumulative effects adequately.

Section IX sets forth its recommended course of action. These recommendations, if followed, would not only ensure the long-term protection of Nantucket Sound, but also promote the timely, cost-effective, and environmentally adequate development of wind energy projects in a manner that is consistent with ocean governance principles.

Volume II of these comments discusses specific DEIS technical deficiencies on a chapter-by-chapter basis. For each chapter, comments are provided according to the corresponding section of the DEIS. An extensive team of consultants has assisted APNS in preparing these comments. These consultants have considerable expertise in their respective fields and present their comments on technical issues in the DEIS from a disinterested and unbiased perspective. The names of these consultants, their respective areas of expertise, and a summary of their credentials, are set forth in Exhibit 2.

APNS has recommended these steps from the outset of the public debate over the CWA wind energy plant more than three years ago. Had these recommendations been adapted at that time, as recommended by numerous elected officials, governmental entities, public interest organizations, and the general public, a rational and effective offshore wind energy program would already be in place and a mechanism established for the review and authorization of projects such as this in locations that, unlike Nantucket Sound, are suitable for development. As discussed in

Section IX, it is not too late for such a program to emerge, provided the Corps and other federal agencies exercise leadership and sound decision-making.

II. SUMMARY OF SUBSTANTIVE LEGAL DEFICIENCIES – INSUFFICIENCY OF SECTION 10 TO AUTHORIZE OFFSHORE WIND ENERGY PROJECTS

CWA does not have permission from the federal government to use the OCS for its proposed development, and the Corps has no power to grant such authority. From the start of this process, permission in the form of explicit Congressional authorization has been lacking. Even if CWA obtains a section 10 permit (which the Corps cannot grant consistent with Administrative Procedure Act decisionmaking requirements), it still cannot develop the wind plant it proposes.

Throughout the course of the Corps' review of the proposed project, APNS and others have identified this critical deficiency and argued that the Corps cannot permit the project until the deficiency is cured. Although numerous parties have questioned the Corps regarding its position on this critical matter, the Corps has consistently refused to provide an answer. As recently as January 8, 2005, the Corps again side-stepped the question, explaining:

> Our regulations specify that we do not get involved in property rights issues. It is the applicant's responsibility to ensure they have the necessary property rights. It is not our responsibility to tell them what property interests they need to acquire. So we did not spend any time researching that issue any further. Our regulations are clear that we do not address property rights issues. It may be that's an issue that needs to be addressed in the legislative branch of government. That if in fact there is a gap that the people perceive, that is something that the Congress will need to decide whether or not they want to address it.

MTC Meeting, (Jan. 8, 2005). Other agencies have similarly refused to answer this critical question.

The Corps cannot continue to dodge this issue. In *Alliance to Protect Nantucket Sound, Inc. v. United States Dep't. of the Army*, the First Circuit recently held that the "Corps must consider, despite § 320.4(g)(6), *the impact of a permit issuance of federal property rights in various ways*, as part of its general public interest review." 2005 WL 357636, *6 (1st Cir. Feb. 16, 2005) (emphasis added). Although the Corps has consistently hidden behind section 320.4(g)(6) to avoid considering federal property rights, either with respect to CWA's false affirmation on

its permit application or with respect to its public interest review,[3] the First Circuit has directed that Supreme Court precedent requires the Corps to consider federal property interests in evaluating CWA's permit application.

Although the court found that the Corps must consider "the impact of a permit issuance of federal property rights in various ways, as part of its general public interest review," The First Circuit did not decide the "thorny" issue of whether Congressional authorization is needed for major construction on the OCS. The court did, however, express its concern regarding this issue:

> The first part of our opinion holds that a Section 10 permit is *necessary* for all structures on the OCS unless otherwise indicated by law, but does not determine whether such a permit is *sufficient* to authorize building on the federally controlled OCS.
>
> Whether, and under what circumstances, additional authorization is necessary before a developer infringes on the federal government's rights in the OCS is a thorny issue, one that is unnecessary to delve into in the instant case. The data tower at issue here involves no real infringement on federal interests in the OCS lands. To start, the structure is temporary, of five years' duration, more than two of which have now passed. The tower is also not exclusive--it must accept data collection devices form the government and others, and it must give the data to the government. The tower is a single structure, and it provides valuable information that the Corps requires in order to evaluate the larger wind energy plant proposal. The Corps's public interest evaluation of the data tower resulted in a finding of "negligible impact" on property ownership and stated that collection of the data is in the public interest. Environmental Assessment at 4-5. It is inconceivable to us that permission to erect a single, temporary scientific device, like this, which gives the federal government information it requires, could be an

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[3] Although the court found that the Corps had considered property interests in its public interest review for the data tower, *id.* at *6, the Corps consistently maintained throughout the litigation that it did not and would not. Thus, the "0" that the Corps assigned for the property ownership factor in the public interest test for the data tower is more likely a reflection of their unwillingness to consider any property issues whatsoever, than an actual finding that the data tower would have an actual effect. In any case, the Corps' statement that it will not consider federal property interests is obviously no longer a viable position as a result of APNS's legal challenge.

> infringement on any federal property ownership interest in the OCS.
>
> Thus, the question of infringement of federal property interests is entirely hypothetical in this case. . . . We do not here evaluate whether congressional authorization is necessary for construction of Cape Wind's proposed wind energy plant, a structure vastly larger in scale, complexity, and duration, which is not at issue in the present action. Our analysis is limited to whether additional Congressional authorization is necessary for the data tower, which does not infringe on any federal property interest, and we conclude that it is not.

Id. at *6-7 (emphasis in original). Ex. 3.

APNS quotes almost the entirety of this section because of the critical issues the court points out. The court found that the data tower does not infringe on federal property interests; consequently, it did not reach the critical issue of whether congressional authorization is needed.

Importantly, the First Circuit determined that it did not need to reach that issue because the data tower did not infringe on federal property interests for the following reasons: 1) the structure is temporary only (almost half the period has already run); 2) the structure is non-exclusive and must be made available for others for research; 3) the data is needed for the EIS, according to the applicant and the Corps[4]; and 4) the structure is de minimus in nature, only involving one small structure.

The logical conclusion for the court's analysis is that the wind plant, in contrast, *will be* an infringement on federal property interests. Indeed, the proposed project is opposite in every respect from those factors the court deemed critical in finding the data tower a de minimus intrusion: 1) the proposed plant is of significantly longer duration; 2) it is exclusive to the developer, and will be the source of huge private profits for CWA; 3) the region does not need electrical power, and the power generated will be sold for profit by CWA, with no competitive bidding, rents or royalties charged to produce revenue for the United States; and 4) the project involves 131 massive structures, each substantially larger than the data tower, as well as over 100 miles of transmission cable.

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[4] In fact, no data whatsoever was incorporated into the DEIS by the Corps. It is quite apparent that the Corps did not require the data for any purpose in producing this DEIS.

The Corps must now confront the question it has so assiduously avoided for the last three years. How will permitting of the proposed project impact federal property rights, and is a section 10 permit sufficient authorization to build on the OCS?

In fact, the answers to these questions have long been obvious. A section 10 permit is not adequate, and there is no legal authority for this project.

The following discussion is divided into two parts. The first section addresses why, as a matter of law, Congressional authorization is needed to build the proposed plant on the OCS. The second section addresses how the proposed plant impacts federal property interests and why the Corps cannot permit the structure.

A. Congressional Authorization Is Prerequisite to Private Development of Federal Lands.

1. Only Congress Can Authorize the Use of Federal Lands and Waters.

The reason why a section 10 permit alone is insufficient is clear: Congress has not authorized the use of federal offshore lands for wind energy development.

Under the Property Clause of the United States Constitution, only Congress has the power to authorize use of federal lands and waters. U.S. Const. art. IV, sec. 3, cl. 2; *see e.g. Branson Sch. Dist. Re 82 v. Romer*, 161 F.3d 619, 636 (10th Cir.1998) (noting that the "Supreme Court . . . has recognized the very broad powers of Congress under the Property Clause to use and dispose of federal property as Congress sees fit"). The Property Clause of the Constitution provides that "[t]he Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belong[ing] to the United States. . ." U.S. Const., art. IV, sec. 3, cl. 2. Congress' power to act under the Property Clause is "without limitations." *Kleppe v. New Mexico*, 426 U.S. 529, 539 (1976). Without specific authorization from Congress, any non-de minimus construction on the OCS is unlawful.

Indeed, the Supreme Court has consistently upheld the federal government's right to determine the fate of its own property. *See Kleppe*, 426 U.S. at 539; *Alabama v. Texas*, 347 U.S. 272, 273 (1954). It is the right of Congress to determine to whom property will be sold, or the use thereof permitted, and under what conditions. *Van Brocklin v. Anderson*, 117 U.S. 151, 167 (1886). Furthermore, the Court has held that the property interests of the United States "cannot be seized by authority of another sovereignty against the consent of the Government." *Armstrong v. United States*, 364 U.S. 40, 43 (1960). This legal principle is not altered as against a private individual

or company rather than another sovereign. *Utah Power & Light Co. v. United States*, 243 U.S. 389, 408-09 (1917) (examining a private company's claims of ownership of government land under the Property Clause). Further, agency officials do not have the authority to dispose of public lands except through statutory procedures. *Double J. Land & Cattle Co. v. United States Dept. of the Interior*, 91 F.3d 1378, 1382 (10th Cir. 1996).

After reviewing the relevant legal authorities, the American Law Division for the Congressional Research Service ("CRS") of the Library of Congress recently also determined that more is required to construct offshore wind energy facilities on the OCS than a section 10 permit. The CRS determined that "[although] the Corps does not have a responsibility to deny a permit even when property rights cannot presently be obtained . . . , *construction on the OCS without first obtaining these rights would remain unlawful*." *See* Ex. 4, at 13 (emphasis added). The CRS further concludes, "It appears that no federal agency, including the Army Corps of Engineers, which permits structures only for navigability purposes, can authorize the occupation and use of OCS lands for wind and other renewable energy purposes under current law." *Id.* at 12.

Congress has simply not authorized the proposed activity. Nor can CWA rely on the section 10 permit as some sort of "implicit authorization." The Corps' section 10 regulations expressly disclaim any grant of property rights under the RHA permitting regime. *See* 33 C.F.R. § 320.4(g); *see also Double J. Land & Cattle*, 91 F.3d at 1382. In light of that disclaimer, and in the absence of any other form of authorization, the inescapable conclusion is that a section 10 permit alone is insufficient for CWA to construct its project.

2. A Determination that Congressional Authorization Is Necessary Is Consistent with the Public Trust Doctrine.

The conclusion that federal authorization is prerequisite to development on federal lands is consistent with the public trust doctrine. The doctrine holds that in the absence of explicit legislative authorization, public trust resources like the OCS cannot be transferred to private parties for development.

The federal government holds OCS resources in trust for all of its citizens under the public trust doctrine. The common law public trust doctrine stands for the notion that the government holds the public domain as part of its trust. *United States v. Beebe*, 127 U.S. 338, 342 (1888). This trust bestows a duty upon the government "to protect and preserve the lands for the *public's common heritage*," *Sierra Club v. Block*, 622 F. Supp. 842, 866 (D. Colo. 1985) (emphasis added), and for the public's benefit, *see Shively v. Bowlby*, 152 U.S. 1, 11 (1894).

The doctrine has its roots in ancient Rome and has traditionally applied to navigable waters, protecting such things as navigation, commerce and fishing. *See* Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 Mich. L. Rev. 471, 475 (1970). The doctrine has expanded over time to protect wildlife, water quality, public recreation, aesthetics and ecological integrity. *See* Harry R. Bader, *Antaeus and the Public Trust Doctrine: A New Approach to Substantive Environmental Protection in the Common Law*, 19 B.C. Envtl. Aff. L. Rev. 749, 753 (1992). In no way is it a stretch, therefore, to find that the doctrine applies to OCS resources; those values that would be impacted by the proposed project are the very same values that have been protected by the doctrine since its inception.

The public trust doctrine has three historic features: "First, it has always embodied a particular substantive content, namely protection and conservation of land.... Second, the doctrine has always had a specific scope: it has always applied to highly valued public lands. Last, the doctrine has taken on a precise form ... it has restricted the exercise of governmental power...." Eric Pearson, "The Public Trust Doctrine in Federal Law," 24 J. Land Resources & Envtl. L. 173 (2004). The doctrine prevents "the destabilizing disappointment of expectations held in common." Joseph L. Sax, "Liberating the Public Trust Doctrine from Its Historical Shackles," 14 U.C. Davis L. Rev. 185, 188 (1980).

The public trust doctrine, which is quite enthusiastically applied by the Commonwealth, exists within the federal common law. *See In re Steuart Transportation Co.*, 495 F. Supp. 38, 40 (E.D. Va. 1980) (the federal government has a "duty to protect and preserve the public's interest in natural wildlife resources"); *U.S. v. Burlington Northern Railroad Co.*, 710 F.Supp. 1286 (D. Neb. 1989) (the U.S. is entitled to compensation under the public trust doctrine for damages to its public lands and the natural resources on them); *U.S. v. 1.58 Acres of Land*, 685 F. Supp. 120, 124 (D. Mass. 1981) (the federal government maintains a public trust duty to protect the public's interest when taking title to tidelands); *City of Alameda v. Todd Shipyards Corp.*, 635 F. Supp. 1447, 1450 (N.D. Cal. 1986) ("United States may not abdicate [the] role of trustee for the public when it acquires land by condemnation.")

Although the federal common law can only be created in "few and restricted" instances, *Texas Industries, Inc. v. Radcliff Material, Inc.*, 451 U.S. 630, 640 (1980), protection of valuable resources held in common for the citizens of the United States is clearly one of those instances. The proposed project involves "the rights and obligations of the United States" resulting from its location on the OCS; the federal common law rule is "necessary to protect uniquely federal interests." *Id.* at 641.

Indeed, the idea that the United States has a general trust duty for public lands has a long history dating back to the foundation of the country. *See Shively*, 152 U.S. at 14 ("[American lands] [h]aving been discovered by subjects of the king of England ... were held by the king as the representative of, and in trust for, the nation.... Upon the American Revolution, all the rights of the crown vested in the several states, subject to the rights surrendered to the national government...."); *Pollard v. Hagan*, 44 U.S. 212, 229 (1845) ("When the Revolution took place the people of each state became themselves sovereigns; and in that character held the absolute right to all navigable waters and the solids under them for their own common use...."); *Beebe*, 127 U.S. 338 (the "public domain is held by the Government as part of its trust. The Government is charged with the duty and clothed with the power to protect it from trespass and unlawful appropriation..."); *Light v. United States*, 220 U.S. 523, 537 (1911) ("The public lands are held in trust for the people of the whole country and the government is charged with the power to take control of public lands."); *United States v. Trinidad Coal Company*, 137 U.S. 160, 170 (1890) (lands of the United States are held in trust for all the people); *Sierra Club v. Department of Interior*, 398 F. Supp. 284, 287 (N.D. Cal. 1975) (there is "a general trust duty imposed ... by the National Park System Act ... to conserve scenery and natural and historic objects and wildlife....").

It is, of course, possible for the the common law public trust doctrine to be superceded. For example, Congress could preempt the doctrine by authorizing private development of public trust resources. Preemption of federal common law, however, requires Congressional action, which has not occurred in this case, and "involves an assessment of the scope of the legislation and whether the scheme established by Congress addresses the problem formerly governed by federal common law." *City of Milwaukee v. Illinois*, 451 U.S. 304, 315 n.8 (1981). Because "Congress has not spoken" to the particular issue of offshore wind energy, preemption of the doctrine is not implicated. The federal common law public trust doctrine applies without hesitation. *Id.* at 313, 315.

The value of submerged lands in particular to the nation was made clear by the Supreme Court over a century ago. *See Illinois Central Rwy. Co. v. Illinois*, 146 U.S. 387, 452 (1892). In *Illinois Central*, the Court held that the transfer of submerged lands in Lake Michigan to a private company by the State of Illinois was invalid because the title to submerged land is "different in character from that which the State holds in lands intended for sale." *Id.* at 452. The Court explained:

> The State can no more abdicate its trust over property in which the whole people are interested, *like navigable waters and the solids under them, so as to leave them entirely under the use and control of private parties* ... than it can abdicate its police powers

> in the administration of government and the preservation of peace.

Id. at 453 (emphasis added).

Likewise, the Corps cannot, as an agent of the federal government, adbdicate its responsibility over trust property in which the whole of the people are interested – i.e., Nantucket Sound – without Congressional action. This principle is no less true for the proposed project than it was for *Illinois Central* because of its location in federal offshore waters. *See also Shively*, 152 U.S. at 49-50 ("[T]he navigable waters and the solids under them ... shall not be disposed of piecemeal to individuals as private property, but shall be held as a whole for the purpose of being ultimately administered and dealt with for the public benefit by the State....") and *People ex rel. Scott v. Chicago Park Dist.*, 66 Ill.2d 65, 79 (Ill. 1976) (Where public land belonging to the people is ceded "in favor of a private interest," such action must "withstand a most critical examination," and the benefits to be enjoyed cannot be "too indirect, intangible, and elusive to satisfy the requirement of a public purpose.").

The public trust doctrine is therefore consistent with the conclusion that Congressional authorization is first required before public trust resources can be used by private parties. Without explicit Congressional authorization preempting the application of the public trust doctrine, private exploitation of public trust resources is impermissible. In short, Nantucket Sound is off-limits to CWA developers.

3. Construction on the OCS Without Federal Permission Is Equivalent to Trespass.

The consequence of occupying OCS lands without Congressional authorization is to commit the equivalent of intentional tort. A section 10 permit is merely a determination by the Secretary of the Army that a proposed project is not an unreasonable impediment to navigation. *See* 33 U.S.C. § 403. A section 10 permit is not permission to use federal property. *See* 33 C.F.R. § 320.4(g)(6). Without permission to use federal property, CWA will be subject to federal injunction if it builds its project on OCS lands.

It is a trespass to enter upon another's land without consent. *Desnick v. A.B.C.*, 44 F.3d 1345, 1351 (7th Cir. 1995); *Monterosso v. Gaudette*, 391 N.E.2d 948, 953 (Mass. App. Ct. 1979); *McLaughlin v. Watts*, 1995 WL 809501, *3 (Mass. Super. 1995). Trespass is committed when there is a "continued presence on the land of a structure, chattel, or other thing which the actor or his predecessor in legal interest has placed on the land" without consent. 75 Am. Jur. 2d, *Trespass § 26; Restatement, Torts* 2d § 52.

The OCS consists of federally protected "submerged lands." 43 U.S.C. § 1331(a). With regard to federal property, "the government has the rights of an ordinary proprietor, i.e., to maintain its possession and to prosecute trespassers." *U.S. v. Ruckman*, 806 F.2d 1471, 1472-73 (10th Cir. 1986); *U.S. v. Osterlund*, 505 F. Supp. 165, 167 (D. Colo. 1981) (collecting cases). Numerous federal laws and regulations refer to a cause of action for trespass upon federal lands, including trespass on "submerged lands." *See e.g.*, 48 U.S.C. §1707 (trespass on submerged lands); *see also*, 16 U.S.C. §§ 21-23, 41, 43, 61, 78, 91, 92, 122, 161, 201 (trespass provisions regarding specific national parks); 18 U.S.C. § 1863 (trespass on national forest lands); 28 U.S.C. § 2415-16 (trespass on Indian and public lands); 33 C.F.R. § 207.20(o) (trespass on Cape Cod Canal); 33 C.F.R. § 207.50(n) (trespass on Hudson River Lock); 33 C.F.R. § 207.590(8) (trespass on Black Rock Canal and Lock).

Attempts to occupy federally-controlled lands without authorization will result in injunction. In fact, CWA, which has repeatedly cited *United States v. Ray*, in an effort to claim the United States does not have a property interest in the OCS, is well aware that the unauthorized use of federally-controlled property subjects the occupier to eviction as with trespass. 423 F.2d 16 (5th Cir. 1920).

The defendants in *Ray* planned to use two coral reefs lying in international waters about four and one-half miles off the southeast coast of Florida to create island nations. The federal government sued the defendants for failure to obtain a section 10 permit and for trespass. Although the lower court found that an action in trespass could not be maintained where the United States had not claimed full title to the property, the Court of Appeals reversed. The court explained that while an action for trespass quare clausum fregit[5] may have been "inaccurately framed," the court did

> . . . not understand that claim to seek such a remedy, despite the language in which the petition is couched. Damages, an inseparable element in the common law action for trespass, are not sought here, and the only relief requested is restraint from interference with rights to an area which appertains to the United States and which under national and international law is subject not only to its jurisdiction but its control as well.

Ray, 423 F.2d at 22. "Neither ownership nor possession is, however, a necessary requisite for the granting of injunctive relief." *Id.* Furthermore, the court found that

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[5] Trespass quare clausum fregit is "[t]hat species of the action of trespass *which has for its object the recovery of damages*." Black's Law Dictionary 1244 (6th Edition 1990) (emphasis added).

the "rights of the United States in and to the reefs and the vital interest which the Government has in preserving the area *require full and permanent injunctive relief against any interference with those rights* by defendants and intervenor." *Id.* at 23 (emphasis added).

As with *Ray*, the United States' vital interests in the rights and resources[6] of the Nantucket Sound demands permanent injunctive relief against any interference of those rights by private parties. As already noted, the First Circuit opinion in *Alliance to Protect Nantucket Sound* strongly indicates that the wind plant will infringe on the property interests (and therefore the rights) of the United States. Section 10 only implicates the federal government's right to protect against interference with the nation's navigable waters. Without more, occupation on the OCS constitutes interfence with the federal government's rights and will be subject to permanent injunction.

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[6] Indeed, many of the facts that the court looked to as evidence of the value of the region could easily have been describing Nantucket Sound:

> The evidence overwhelmingly shows that the Government has a vital interest, from a practical as well as an aesthetic viewpoint, in preserving the reefs for public use and enjoyment. The protective underwater crannies of the reefs serve as a haven and spawning ground for myriad species of tropical and game fish. The unique and spectacular formations of the submerged coral deposits attract scores of water sports enthusiasts, skin divers, nature students, and marine researchers. Certain organisms living on the reefs contain substances useful in pharmacology. The reefs protect the inland waters from the heavy wave action of the open sea, thus making the area conducive to boating and other water sports. Congress, intent on conserving the value and natural beauty of the area, recently enacted the Biscayne National Monument Bill establishing the area, which includes both Triumph and Long Reefs, as a national monument. The reefs are a part of the series of coral reefs which dot the coastal and international waters extending out from southeastern Florida. Slightly to the south and west of the Triumph and Long Reefs, and straddling the three-mile dividing line between federal and state waters, is the huge federal-approved John Pennekamp Coral Reef State Park, also known as Key Largo Coral Reef Preserve. The fact that the area is worthy of preservation is abundantly demonstrated by the evidence.

Id. at 22-23. As has been discussed previously in these comments, Nantucket Sound is an extraordinarily valuable natural resource, known world-wide for its spectacular beauty. It is a recreational paradise, with critically important fishing grounds. It is home to one of the world's most eminent oceanographic research institutions – Wood's Hole Oceanographic. Not only is the center of the Sound ringed by state sanctuary waters, the entire Sound has been nominated for national marine sanctuary status.

4. The Navigational Servitude for Nantucket Sound Remains in Effect Notwithstanding Section 10.

More evidence of the illegality of development without Congressional authorization is the lack of protection of property for the proposed construction associated with the issue of navigational servitude. The navigational servitude prohibits CWA from claiming a property right to Horseshoe Shoal or any protection for the investment in this $800 million proposed project.

A navigational servitude is a pre-existing limitation on riparian property. *See United States v. 30.54 Acres of Land*, 90 F.3d 790, 795 (3d. Cir. 1996). It originates from the dominant right of the public to navigate and fish in navigable waterways without interference. *See* Benjamin Longstreth, *Protecting "The Wastes of the Foreshore": The Federal Navigational Servitude and its Origins in State Public Trust Doctrine*, 102 Colum. L. Rev. 471, 486 (2002). "The federal navigational servitude is paramount to all other interests in navigable waters. The courts have found alteration or destruction of structures, interference with the right of access, and interference with fee simple title all within the scope of the servitude." Genevieve Pisarski, *Testing the Limited of the Federal Navigational Servitude*, 2 Ocean & Coastal L.J. 313, 316 (1997).

The federal government's paramount servitude over navigable waters is evidenced in the Submerged Lands Act, which states:

> The United States retains all its navigational servitude and rights in and powers of regulation and control of said lands and navigable waters for the constitutional purposes of commerce, navigation, national defense, and international affairs, all of which shall be paramount to, but shall not be deemed to include, proprietary rights of ownership, or the rights of management, administration, leasing, use, and development of the lands and natural resources which are specifically recognized, confirmed, established, and vested in and assigned to the respective States and others by section 3 of this Act.

43 U.S.C. § 1314(a). The Supreme Court similarly stated, more than a century earlier, that:

> [T]he doctrine of dominion over and ownership by the crown of lands within the realm of tide waters is founded . . . upon the fact that the waters are navigable . . . . The public being interested in the use of such waters, the possession by private individuals of

> lands under them could not be permitted except by license of the crown, which could only exercise such dominion over the waters as would insure freedom in their use so far as consistent with the public interest. The doctrine is founded upon the necessity of preserving the public use of navigable waters from private interruption and encroachment, a reason as applicable to navigable fresh waters as to waters moved by tide.

Illinois Central, 146 U.S. at 437.

The navigational servitude is thus a reflection of the public trust and the government's responsibility to administer that trust. The power to invoke the navigational servitude arises from the need to protect or improve navigation. *Id.* at 423. The government can successfully use its navigational servitude when two requirements are met: 1) the property is located within navigable waters; and 2) there will be either a navigable purpose or effect. *Id.* Both requirements are met for CWA's proposal. The Horseshoe Shoal area is navigable in fact, and the project will have an impact on navigation.

The problem facing CWA is that so long as the navigational servitude remains in effect, the federal government is not obligated to pay compensation for removal of the structure. *See* Alan T. Ackerman & Noah Eliezer Yanich, *Just and Unjust Compensation: The Future of the Navigational Servitude in Condemnation Cases*, U. Mich. J. L. Reform 573, 579 (2001). "'Navigational servitude' is an expression of the notion that the determination whether a taking has occurred must take into consideration important public interest in flow of interstate waters. . . ." *Kaiser Aetna v. United States*, 444 U.S. 164, 175 (1979). Without assurance of compensation for forced removal, significant investment in an untested technology in a location heavily utilized by fishing and boating interests, and which encompasses numerous other environmental values, becomes an extraordinarily high-risk endeavor.

The only way that CWA can get the navigational servitude for Horseshoe Shoal waived is through congressional action. Pisarski, *supra*, at 323. The congressional waiver must be explicit to overcome the servitude. *Id.* "[A] waiver of sovereign authority will not be implied, but instead must be 'surrendered in unmistakable terms.'" *United States v. Cherokee Nation of Oklahoma*, 480 U.S. 700, 707 (1987) (*quoting Bowen v. Public Agencies Opposed to Social Security Entrapment*, 477 U.S. 41, 52 (1986)).

Congress has not broadly waived navigational servitudes for offshore projects. In fact, with respect to offshore oil and gas leases, the navigational servitude is not waived in any case. Instead, when the government enters into a contract with lessees,

the lease provides for compensation if the government were to break the lease and force the removal of structures. The Outer Continental Shelf Lands Act ("OCSLA"), in fact, includes a national security clause, that provides, "all such leases shall contain or be construed to contain provisions for the payment of just compensation to the lessee whose operations are thus suspended." 43 U.S.C. § 1341(c). Of course, no lease system exists for offshore wind, so this provision of the OCSLA is inapplicable.

When there is no statutory assurance of compensation, as with the proposed project, a party may seek a declaration of non-navigability from Congress to remove the navigational servitude. A declaration of non-navigability is necessary to "assist the project developers in obtaining financing for [a] project." 137 Cong. Rec. 3639, 3687. Only through this waiver is the federal government prevented from taking property without just compensation.

It will be practically impossible for CWA to obtain a declaration of non-navigability. In most declarations, the Congressional representative from the district where the declaration is needed introduces the legislation. Typically, the legislation pertaining to a declaration of non-navigability passes without much debate. Most are considered routine issues, so they do not face any opposition. With respect to the CWA proposal, however, there is tremendous opposition to the project. The political support to achieve such a declaration is not possible absent the willingness of home state delegation, which of course CWA lacks and cannot attain. Further, it is highly unlikely that CWA will be able to convince the federal government to assume financial liability, should the project ultimately present a problem to the nation's navigational interests and national security concerns, without ever having considered the issue of offshore wind. CWA's inability to obtain a waiver makes the proposed project financially precarious, if not foolish. The interest of the public will not be served by permitting a project so vigorously opposed in an area highly popular for other uses, of such questionable financial viability.

B. The Impacts of Permit Issuance on Federal Property Rights Precludes the Corps from Granting the Permit CWA Seeks.

The First Circuit has held that the "Corps must consider, despite § 320.4(g)(6), *the impact of a permit issuance of federal property rights in various ways*, as part of its general public interest review." 2005 WL 357636, at *6. Thus, the Corps must consider the sufficiency of a section 10 permit for the proposed use and how granting CWA the permit it seeks will impact federal property interests.

In light of the above discussion, the Corps has only one option: deny the permit outright because protection against infringement of federal property interests requires

permit denial. Failure to follow this approach will compromise federal property interests and subject the United States to protracted controversy and litigation.

1. Because Section 10 Is an Inadequate Basis for Review, the Impact of Permit Issuance on Federal Property Rights Would Be Severe.

Federal property interests cannot be protected by allowing development in the absence of a comprehensive program designed specifically to administer an offshore wind energy program. CWA insists that section 10 and the ancillary procedural reviews under NEPA and similar laws bring into play all of the relevant decision making considerations. Even a cursory review of federal environmental and natural resource law demonstrates why CWA is wrong.

a. The RHA is not sufficient to regulate properly a complex energy development program.

The RHA was not intended to be used as a source of authority for developing public resources. Rather, the purpose of the RHA was to provide one aspect of the review/permitting necessary for development in navigable waterways; specifically, to regulate obstructions in the nation's navigable waters. *See Willamette Iron Bridge Co. v. Hatch*, 125 U.S. 1 (1888). As explained by one court construing section 10 not long after the enactment of the RHA:

> Section 10 may be searched in vain for the discovery of any affirmative grant of right or power for the construction of any instrumentality of commerce. The section is entirely negative and prohibitive in character. It is intended to prevent obstruction to navigation, and that alone. . . . To say that it is authority for the prosecution of a work or works in or under any of the navigable waters of the United States, unless those works have first been affirmatively authorized by proper authority, either state or federal, is, in my judgment, to give the section a meaning which is unsupported by any rule of construction known to the law.

Wilson v. Hudson Valley Water Company, 76 A. 560, 565 (N.J. Ch. 1910).

In fact, Congress initially enacted section 10 in 1890, *see* 26 Stat. 426, 454, after the Supreme Court held that in the absence of federal legislation, the federal government was powerless to protect the nation's navigable waters from obstruction, including obstacles created by state-authorized projects. *See Willamette Bridge*, 125 U.S. 1. This section, with minor changes, became section 10 of the 1899 Act. Two

decades later, the Corps failed in an attempt to use the RHA to object to a proposed sewer in New York City, when the judge ruled that the only purpose of the law was regulation of obstacles to navigation. *See* U.S. Army Corps of Engineers, *Brief History: Environmental Activities*, at <http://www.hq.Corps.army.mil/history/brief3.htm>.

CWA relies upon a single provision – one paragraph - in the Corps' regulations to claim that the section 10 process is sufficient review for a project of this scale: 33 C.F.R. § 320.4(a). The public interest test, as section 320.4(a) is called, however, merely enumerates certain factors the Corps must consider when evaluating an application *for a navigability permit.* Among the factors to be considered are conservation, economics, aesthetics, fish and wildlife, historic preservation, energy needs, and others.[7]

Although these factors are indeed relevant to the development of a power plant in Nantucket Sound, they alone are insufficient to regulate all offshore wind energy development. There is no standard manner in which the Corps is to consider these factors.[8] Most importantly, this simple provision does not contain any standards regarding how to evaluate impacts under each one of the enumerated factors. The section 10 public interest is nothing more than guessing game, subject to the Corps' unfettered discretion. The unguided nature of the section 10 process is confirmed by

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[7] Traditionally, when issuing permits under § 10 of the RHA, the Corps looked only to the navigational impacts the project would pose. Lawrence R. Liebesman, "Regulatory Standards for Individual Permits under the Clean Water Act Section 404 Permit Program and the Role of EPA's Section 404 Permit Program and The Role of EPA's Section 404(b)(1) Guidelines," SA83 ALI-ABA 187, 189 (May 29, 1996). This changed, however, in 1968, when regulations were revised to require the Corps to also consider wildlife, conservation, pollution, aesthetics, ecology, and the general public interest in their permitting decisions. *Id.* Thus began what has become known as the "public interest review" process in the Corps permit decisionmaking. Corps regulations were amended again in 1974, taking into account NEPA and the Federal Water Pollution Control Act. *Id.*

[8] According to the regulations, the weight each factor of the public interest review is a given "is determined by its importance and relevance to the particular proposal." 33 C.F.R. § 320.4(a)(3). It is a "balancing process." *Id.* at §320.4(a)(1)(2005). Thus, because each case is different, each factor is weighed differently depending on the circumstances. *Id.* "A specific factor may be given great weight on one proposal, while it may not be present or as important on another." *Id.* Corps regulations further state: "The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. ... The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. The decision whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur, is therefore determined by the outcome of this general balancing test." *Id.*

the Corps' failure to provide, at any time during the review of this application, an explanation as to how these factors should be weighed and balanced. The result is a virtually standardless decision-making test that while perhaps appropriate for a navigability permit, is wholly incapable of being stretched to serve as the all-purpose source of authorization for a massive wind energy project without substantially compromising federal property interests.

Further, the Corps personnel that have been informally tasked with administering this program and evaluating permit requests are operating outside of their area of expertise. They have not been trained in energy development, transmission issues, regional grid requirements, regional energy needs, and technological issues associated with intermittent power sources.

The Corps is not equipped to make any of these judgments with the requisite degree of expertise. This is clear from the Corps' mission statement and description of purpose. The Corps' role is to plan, design, build and operate water resources and other civil works projects; to design and manage the construction of military facilities for the Army and Air Force; and to provide design and construction management support for other Defense and federal agencies. U.S. Army Corps of Engineers, *Who We Are: Our Mission*, at <http://www.Corps.army.mil/who.html#Mission>. The issue properly within the Corps' expertise, impacts to navigation, is not the driving force for this project, and the Corps is simply ill-equipped to handle the development of offshore resources efficiently and wisely.

Indeed, the Corps itself has acknowledged as much in its letter of September 3, 2003 to Congressman Freylinghuysen, where it stated, "We are also coordinating with the President's Energy Task Force and other federal agencies since some of the issues (e.g., property ownership on the OCS and a national policy on wind energy) are beyond the Corps' statutory authorities." Ex. 5. This admission by the Corps effectively says it all: the CWA permit application should never have been accepted for review by the Corps. By reviewing this permit application, Corps' personnel have been thrust into a role for which they are insufficiently trained and inadequately supported. Federal property interests are being jeopardized by the Corps' continued review.

b. Other federal programs for resource development illustrate the inadequacy of section 10 for protecting federal property interests.

One need only reference any of the numerous other federal programs that regulate the use and occupancy of federal lands or the extraction and use of natural resources to identify the numerous deficiencies in the section 10 process. All federal

natural resource programs contain common elements missing from section 10 review, including: 1) resource-specific authorization to individual agencies with the relevant expertise; 2) resource-specific environmental standards; 3) enumerated criteria upon which a decision must be made; 4) standards directing agencies how to balance interests when making decisions; 5) land use authorization mechanisms; 6) competitive bidding procedures for the use of federal resources; 7) fair market value requirements to ensure return to the government and the taxpayers for the use of public trust resources; 8) specification of areas to be off-limits to development; 9) due diligence requirements for the development and use of the resource to ensure efficiency, public health and safety; 10) enforcement and citizen suit provisions; and 11) mandatory roles for state and local governments. The effect of the absence of these factors on federal property interests must be considered. *See Alliance to Protect Nantucket Sound*, 2005 WL at *6.

Congress has consistently viewed these elements as necessary to enable thoughtful and structured use of natural resources in a manner that protects federal interests; yet all of these elements are missing from section 10. Moreover, the public interest test in 33 C.F.R. § 320.4(a) simply does not adequately constrain agency decision-making. This paragraph of regulatory text is nothing more than a list of issues to evaluate when considering whether to allow an impediment to navigation. Congress did not intend the RHA to be used in the fashion the Corps and the CWA developers are using it.

Indeed, numerous agencies and parties have acknowledged the inadequacy of the existing program. As early as June, 2002, the MMS stated that,

> [T]here exists no designated Federal agency that is tasked with the authority to protect the Federal interest in the OCS and to manage activities that ensure that they are conducted in a safe and environmentally sound manner. Applicants seeking to conduct activities on the OCS that are not specifically oil or gas-related have no guidance or clear direction by which to ascertain which Federal agency or agencies must be consulted in order to obtain the necessary permits to further the development of projects on the OCS.

Ex. 6. This view has been repeated by other governmental entities taking an independent look at the issue. *See* Ex. 4. In addition, many commentators have discussed the inadequacies of the existing program and the need for more comprehensive reviews. *See e.g.*, Michael Schulz, *Questions Blowing in the Wind: The Development of Offshore Wind as a Renewable Source of Energy in the United States*, 38 New Eng. L. Rev. 415 (2004). This issue was the focus of a forum held by

Boston College Law School, where several authors expressed concern over the deficiencies in the current inadequate regulatory framework. *See e.g.,* Guy R. Martin, Odin A. Smith, *The World's Largest Energy Facility in Nantucket Sound? Deficiencies in the Current Regulatory Process for Offshore Wind Energy Development*, 31 B.C. Envtl. Aff. L. Rev. 285 (2004); Elizabeth A. Ransom, *Wind Power Development on the United States Outer Continental Shelf: Balancing Efficient Development and Environmental Risks in the Shadow of the OCSLA*, 31 B.C. Envtl. Aff. L. Rev. 465 (2004); Carolyn S. Kaplan, *Congress, the Courts, and the Army Corps: Siting the First Offshore Wind Farm in the United States*, 31 B.C. Envtl. Aff. L. Rev. 177 (2004).

The most significant statement on the defects in the use of section 10 for offshore wind project permitting comes from the U.S. Oceans Commission. This bipartisan review board, established by President Bush under federal law, conducted a searching review of this specific question, including public testimony.[9] It found section 10 to be an inadequate basis for wind project permitting:

> [T]he United States already has a wind energy management program applicable on some federal lands onshore. This comprehensive program is carried out by DOI's Bureau of Land Management under broad authority provided by the Federal Land Policy and Management Act.
>
> Conversely, there is no comprehensive and coordinated federal regime in place to regulate offshore wind energy development or to convey property rights to use the public space of the OCS for this purpose. In the absence of a specific regime, the [Corps] is the lead federal agency responsible for reviewing and granting a permit for this activity. Its authority, however, is based on section 10 of the Rivers and Harbors Act, which, although it has a public interest requirement, primarily regulates obstructions to navigation, including approval of any device attached to the seafloor.

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[9] In addition to the numerous meetings held in Washington D.C., the Ocean Commission held public meetings in Boston during which the proposed project was discussed at length. *See* <http://www.oceancommission.gov/meetings/jul23_24_02/july23_24_02.html#summary>.

> The section 10 review process stands in stark contrast both to the well established DOI regulatory program for onshore wind energy and, in the marine setting, to the robust regulatory program for offshore oil and gas that has developed under the OCSLA. Using the section 10 process as the primary regulatory vehicle for offshore wind energy development is inadequate for a number of reasons. First and foremost, it cannot grant leases or exclusive rights to use and occupy space on the OCS. It is not based on a comprehensive and coordinated planning process for determining when, where, and how this activity should take place. It also lacks the ability to assess a reasonable resource rent for the public space occupied or a fee or royalty for the energy generated. In other words, it lacks the management comprehensiveness that is needed to take into account a broad range of issues, including other ocean uses in the proposed area and the consideration of a coherent policy and process to guide offshore energy development.

U.S. Ocean Commission Report, Ch. 24, p. 318. Ex. 7.

The OCSLA, as the U.S. Ocean Commission noted, is an example of a well-conceived, comprehensive approach to the development of offshore oil and gas resources. By simple comparison to the section 10 process, it is clear why the use of the vague and standardless public interest test is insufficient for CWA's effort to privatize Nantucket Sound.

The stated purpose of the OCSLA is, among other things, to encourage and facilitate the development of energy production from the OCS. In developing the OCSLA, Congress stressed the importance of establishing specific standards governing uses of these lands and waters. Many of those standards are set forth in section 1332, entitled "Congressional Declaration of Policy," which includes:

Environmental Safeguards. Subsection 1332(3) states that the OCS is a "vital national resource held by the Federal Government for the public" the development of which should be subject to "environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs." 43 U.S.C. § 1332(3).

Fair Market Value. Subsection 1332(3) requires that any program providing for development of the OCS be in the public interest, and be consistent with principles of competition and other national needs. *Id.* § 1332(3). At the very least, that would

require that the United States to receive fair market value for any private use of its property.

State and Local Government Involvement. Subsection 1332(4) insists that coastal states receive sufficient assistance in dealing with any adverse consequences that may result from a given use of the OCS. *Id.* § 1332(4). Further, subsection 1332(5) requires that "the rights and responsibilities of all States and, where appropriate, local governments, to protect their marine, human, and coastal environments . . . should be considered and recognized." *Id.* § 1332(5).

These three factors alone illustrate the obvious inadequacy of the RHA to guide the development of offshore wind energy. Reference to other sections in the OCSLA only underscores that point. Congress dictated the basic framework for allowing uses of offshore areas for oil and gas, the central elements of which include: 1) delegation of responsibility for the program to the Secretary of the Interior, *id.* § 1344(a); 2) publication of a five-year schedule of proposed lease sales indicating the size, timing and location of leasing activity, *id.*; 3) assurance of receipt of fair market value for lands leased and rights conveyed by the federal government, *id.* at § 1344(a)(4); 4) provision for appropriations and staff necessary to obtain resource information, analyze and interpret exploratory data, conduct environmental studies, supervise operations to ensure due diligence in exploration and development of lease areas; *id.* at § 1344(b); 5) annual review of the leasing program, *id.* at § 1344(e); and 6) implementation of procedural regulations for program management, including receipt and consideration of nominations for any area to be offered for lease or excluded from leasing, public notice of and participation in development of leasing programs, review by state and local governments that may be impacted by proposed leasing, and consideration of coastal zone management program in the affected state, *id.* at § 1344(f).

In contrast to the one-paragraph public interest test, the OCSLA implementing regulations span almost 300 pages in the Code of Federal Regulations and provide additional detail and requirements on how to make leasing and permitting decisions and how to ensure environmental protection. For example, the regulations specify performance standards, lease requirements, and reporting requirements, and provide for disqualification, special approvals, rights-of-way and easements, suspensions, extensions, and cancellations of leases for oil and gas operations. *See generally*, 30 C.F.R. Part 250. The regulations also detail requirements for exploration, development, and production plans, pollution prevention and control, safety systems, and safety training. *See id.* Other regulations govern exploration and prospecting, oil spill response and financial responsibility requirements, and operations for minerals other than oil and gas. *See generally*, 30 C.F.R. Parts 251 – 282. Procedures for the administration of offshore leasing programs are especially detailed, including

requirements for the participation of affected states, local governments, and other interested parties, the special consideration of areas of concern, a competitive bidding process, and environmental studies. *See generally*, 30 C.F.R. Part 256.

There is simply no comparison to be made between the Corps' public interest test and the leasing program under the OCSLA. While it may not be necessary to have a regulatory program for wind energy in place as highly detailed as that for oil and gas, it cannot reasonably be argued that such significant activities should be allowed under a vague public interest principle guided by no standards of decision making, no articulated balancing test, and no established environmental safeguards and criteria.

Reference to other laws concerning the use of federal lands and resources further highlights the inadequacy of the section 10 approach. In the onshore context, one of the principle sources of authority for authorizing the use of public lands for mineral extraction and other uses is the Federal Land Management and Policy Act ("FLPMA"), 43 U.S.C. § 1701 *et seq*. Like the OCSLA, this law establishes extensive requirements for authorizing the use of public lands (*id.* §§ 1732(b), 1761(a)), delegation of authority to the federal agencies with appropriate expertise (*id.* § 1712(a), (b)), detailed requirements for land use decision-making (*id.* § 1712), special protection for specific areas (*id.* §§ 1711(a), 1712(c)(3)), and requirements for payment to the federal government (*id.* §§ 1734, 1751, 1764(g)). Indeed, the federal programmatic EIS for onshore wind is the product of FLMPA regulatory authority.

Not only is there specific authorization for onshore wind, the Bureau of Land Management ("BLM") has prepared a programmatic EIS like the type APNS has consistently advocated for offshore wind. The purpose of the programmatic EIS is to: 1) assess the environmental, social, and economic impacts associated with wind energy development on public lands in 11 western states (excluding Alaska) and 2) evaluate a number of alternatives to determine the best management approach to mitigating potential impacts and facilitating wind energy development. 69 Fed. Reg. 54798 (Sept. 10, 2004). The value of this approach is noted in the draft programmatic EIS itself – i.e., the BLM concluded that having a systematic, comprehensive wind energy development program, if properly implemented, will facilitate development and ensure consistency in the review of onshore wind energy applications. By approaching wind energy development onshore in a comprehensive manner, the BLM will actually facilitate the exploitation of the nation's wind energy resources.

The same principles can be found for the development of coal resources for energy-related purposes. Under the Surface Mining Control and Reclamation Act, 30 U.S.C. § 1201 et seq., again a detailed and comprehensive program exists to define environmental standards (*id.* §§ 1265, 1251), designate areas not subject to

development (*id.* §§ 1272, 1281), and create a role for the states (*id.* §§ 1252(a), 1253, 1272(a)).

Similar concepts and requirements are recognized in the alternative energy context. Under the Geothermal Steam Act, 30 U.S.C. § 1001 *et seq.*, Congress sought to promote the use of this form of renewable, alternative energy. Despite the goal of promoting alternative energy, Congress still saw the need to establish a comprehensive program that addresses the same considerations implicit in the OCSLA. In the Geothermal Steam Act, Congress created a mechanism for authorizing the use and occupancy of federal lands (*id.* § 1002), payments to the United States (*id.* §§ 1003, 1004), areas off-limits to development (*id.* § 1014(c)), and delegation to the appropriate agency with substantive expertise (*id.* § 1002). The fact that this program has been successfully implemented without needlessly burdening the development of this alternative source of energy is proof that this same approach can be used for offshore wind energy plants.

These principles are also embodied in statutes governing the use of other renewable resources, such as the Federal Power Act, 16 U.S.C. § 791a *et seq.*, which governs hydroelectric power. The Federal Power Act authorizes the Federal Energy Regulatory Commission to issue licenses for the use and occupancy of waters and lands subject to United States control and jurisdiction and for the development of hydroelectric power. *Id.* § 797(e). Licenses are subject to express environmental criteria. *Id.* §§ 797(e), 803(j). Licensees must pay annual charges to compensate the United States for, among other things, the use, occupancy, and enjoyment of government lands. *Id.* § 803(e)(1). States and local governments are afforded special consideration in the licensing process. *Id.* § 797(f), 800(a), 818, 823a(c). States are also entitled to 37.5% of all revenues deriving from projects within their boundaries. *Id.* § 810(a).

In the context of the marine environment, the same principles are found in other laws. The Ocean Thermal Energy Conversion Act, 42 U.S.C. § 9101 *et seq.*, for example, establishes the rules that govern the use of the U.S. owned waters for thermal energy facilities. This law establishes a licensing system for the location of those facilities (*id.* § 9111, and other sections), and requires the involvement of other agencies with relevant expertise (*id.* § 9111(c)). It contains specific decision-making criteria (*id.* § 9111) and environmental safeguards (*id.* §§ 9117, 9118). This law also delineates the specific role for coastal states (*id.* § 9115).

The Deepwater Port Act follows the same approach. 33 U.S.C. § 1501 *et seq.* Licenses are required to locate such ports. *Id.* § 1503. Authority to license these ports is vested in the Secretary of Transportation. *Id.* Decision-making and

environmental review criteria apply. *Id.* §§ 1505, 1506, 1509. The role of coastal states is provided for. *Id.* § 1508.

Laws dealing with other uses of marine resources, besides land and water, apply similar principles. For example, the Fishery Conservation and Management Act, 16 U.S.C. § 1801 *et seq.*, governing the use of public trust fishery resources of United States marine waters, recognizes the need for a comprehensive approach. National standards governing all uses of fishing resources are set forth. *Id.* § 1851. The mechanism for authorizing private parties to take fish through comprehensive plans that often require specific permits is set forth. *Id.* §§ 1852, 1853. A role is defined for the states. *Id.* § 1852. Special protection and jurisdiction is provided to specific areas. *Id.* § 1855(b). In particular, Nantucket Sound is recognized as unique, due to its geographic configuration, and as a result, the Act vested Massachusetts with jurisdiction over the entire Sound. *Id.* § 1856(a)(2)(B).

Numerous other examples could be cited from federal law. Congress has consistently required much more than the Corps is doing for the proposed project. In every one of these areas of interest, the Corps is not the federal agency that has the appropriate expertise or the resources to make the relevant decisions. Energy projects should be overseen by agencies such as the Department of Energy, the Federal Energy Regulatory Commission, and the Minerals Management Service. Uses of offshore lands and waters should be directed by the National Oceanic and Atmospheric Administration and the Minerals Management Service. Decisions on valuation and fair market return also fall under the ambit of those agencies. Decisions regarding birds and living marine resources should be made by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

2. To Protect Federal Property Interests, the Corps Must Deny the Requested Permit.

As the preceding sections illustrate, the section 10 permitting regime is completely inadequate to protect federal property interests, requiring the Corps to deny the permit outright. In the absence of federal legislation, the impact of the proposed project on federal property interests is extraordinary. The federal government will not obtain any revenues from competitive bidding, including for the alternative purpose of conservation. In addition, the United States will not receive lease or royalties from the occupation and use of OCS lands, as it does with virtually all other programs governing natural resource development. The government will lose the opportunity to oversee development of the OCS in a comprehensive, systematic manner. The government will lose the opportunity to develop a comprehensive system of ocean governance. The government will lose the opportunity to protect Nantucket Sound as a national marine sanctuary. Because of

the manner in which the Corps is treating this review, the government will lose the opportunity to evaluate various sites and project applicants to ensure that the offshore wind energy program is wisely administered. Indeed, all of those issues that the government customarily regulates when developing resources programs will not be applied in this context. In fact, the only thing to be gained from the project, as discussed in more detail later in the document, are massive profits for the project proponent alone to enjoy and a trivial amount of clean power that cannot begin to address the problems CWA claims it addresses.

Even if the Corps has *jurisdiction* to grant section 10 permits for any structure on the OCS, without the necessary Congressional authorization for the specific development involved, granting a section 10 permit would result in an unacceptable infringement on federal property interests. Without Congressional authorization and a regulatory regime designed to protect federal property interests, an offshore wind energy facility is against the public interest and cannot be permitted.

III. THE CWA APPLICATION FAILS THE PUBLIC INTEREST TEST

A. The Proposed Project Is Not in the Public Interest.

As discussed in the preceding section, the Corps cannot grant this permit in the absence of explicit Congressional authorization of the activity. A section 10 permit alone is insufficient basis for constructing the wind plant, and without Congressional authorization, federal property interests cannot be adequately protected and the public interest test cannot be passed.

Nonetheless, the Corps has continued to process CWA's section 10 application as if it alone were sufficient authorization for CWA to construct its project. Thus, it remains necessary for APNS to identify the many other specific reasons why the proposed project is not in the public interest. This section of the APNS comments explains why the proposed wind energy plant would negatively affect the public interest. The public interest test as set forth in the Corps' regulations reads as follows:

> The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. Evaluation of the probable impact which the proposed activity may have on the public interest requires a careful weighing of all those factors which become relevant in each particular case. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. The decision whether to

> authorize a proposal, and if so, the conditions under which it will be allowed to occur, are therefore determined by the outcome of this general balancing process. That decision should reflect the national concern for both protection and utilization of important resources. All factors which may be relevant to the proposal must be considered including the cumulative effects thereof: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines and criteria (*see* Sec. 320.2 and 320.3), a permit will be granted unless the district engineer determines that it would be contrary to the public interest.

33 C.F.R. § 320.4(a).

This quotation is the sum total of the standard under which CWA would have the Corps decide the fate of Nantucket Sound. It is also the sole basis upon which project supporters, such as the Conservation Law Foundation ("CLF") and allied groups, feel it is appropriate to formulate national policy on offshore wind energy.

Even though the Corps will use the DEIS to administer this test, *see* 69 Fed. Reg. at 64919 ("The DEIS is intended to provide the information needed for the Corps to perform a public interest review for the Section 10 permit decision."), the Corps fails to provide any analysis of these factors as they relate to the public interest test. Indeed, nowhere in the record is there any explanation of how the Corps is approaching this decision. As a result, the oublic has no idea what the Corps' position is, and there is no proposed agency action on which to comment. Moreover, the Corps has no published guidance on how to interpret or apply this test, besides its regulations, which cryptically provide that each factor is weighed differently depending on the circumstances of the case. *See* 33 C.F.R. §320.4(a)(1). The Corps has never explained in any public setting how it intends to measure, balance and decide the public interest test for the proposed project. As a result, this application is being reviewed in a virtual decision-making vacuum.

Given the lack of guidance from the Corps on the application and meaning of this test, APNS has taken each factor listed in section 320.4 and addressed it separately. For each factor, APNS addresses whether the effect of the CWA proposal is positive, neutral, or negative. To the extent it is possible to quantify such effects based on the DEIS, the record, or other information, APNS does so in its corresponding discussion. For purposes of the ultimate public interest evaluation, APNS assigns equal weight to each factor listed in section 320.4. *See* Figure 1.

FIGURE 1. SUMMARY OF PUBLIC INTEREST FACTORS

§ 320.4 FACTOR	PUBLIC INTEREST EFFECT			
	Positive	Not Applicable	Insignificant	Negative
General Environmental Concerns-Air Quality	✓*		✓*	
Energy Needs	✓**		✓**	
Conservation				✓
Economics				✓
Aesthetics				✓
Wetlands				✓
Historic Properties				✓
Fish and Wildlife Values				✓
Flood Hazards		✓		
Flood Plain Values		✓		
Land Use				✓
Navigation				✓
Shore Erosion and Accretion		✓		
Water Supply and Conservation		✓		
Water Quality				✓
Safety				✓
Food and Fiber Production			✓	✓
Mineral Needs				✓
Considerations of Property Ownership				✓
The Needs and Welfare of the People				✓

*Section 10 does not have a specific factor to address the purported air quality benefits upon which CWA stakes its claim of project benefits. For purposes of this review, air quality issues are considered under the "general environmental factor." Although we have assigned this factor a positive impact, this is done recognizing the speculative and insignificant nature of those benefits.

**As discussed in detail in these comments, the energy benefits of this project also are vastly overstated.

As this figure clearly shows, the impacts of the proposed project are overwhelmingly negative. A review of each of the section 320.4 factors indicates that the project weighs heavily against the public interest. Only one factor, energy, can be regarded as positive, and even this factor is speculative and of far less benefit than CWA claims. The energy this project would produce is not needed now, and would

be generated at a location where it is not of any benefit for the foreseeable future. The air quality benefits are unquantified and unexplained or insignificant. The same is true for greenhouse gas emission reductions. By contrast, there are numerous serious negative impacts. Fourteen of the public interest factors have negative effects, and many of these are very significant. These negative effects greatly outweigh the minor positive impacts. Thus, *the proposed project is not in the public interest.* Indeed, the question is not even a close call.

The necessity of denying the permit application is even more compelling when the Commonwealth's objections are taken into account. Governor Romney has expressed the Commonwealth's clear opposition to this project. The views of affected states are accorded special deference under both Corps regulations, 33 C.F.R. § 325.8 (b),[10] and the President's recent Executive Order on Facilitation of Cooperative Conservation.[11] Governor Romney has objected to the project on grounds based within the realm of section 10 factors. If a permit application as problematic as this one can pass section 10, then the public interest test is truly a rubber stamp for developers to obtain project approval even in the face of overwhelming opposition, extensive data gaps, inadequate information, and clearly identified adverse impacts that greatly overwhelm, in number and cumulative adverse effects, the positive consequences of the proposal.

In light of these overwhelming negative impacts, the Corps should simply deny this application outright. If the Corps intends to continue this review, it must, at the very least, remedy the tremendous holes in the existing data by requiring a

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[10] Under Corps' regulations, the Corps must refer an application to the Division Engineer when the District Engineer's recommended decision in a given case "is contrary to the written position of the Governor of the state in which the work would be performed." 33 C.F.R. § 325.8(b). Further, in cases where "there is substantial doubt as to authority, law, regulations, or policies applicable to the proposed activity," the Chief of Engineers is required to review all applications. *Id.* § 325.8 (c). In fact, in cases where state and local authorizations are needed in addition to an Army Corps permit and the state and local permits have been denied, the Corps will either immediately deny the Army permit without prejudice or continue processing the permit but deny it upon conclusion of its review. *Id.* § 320.4 (j).

[11] On August 26, 2004, President Bush signed Executive Order 13352 on Facilitation of Cooperative Conservation. The purpose of the order is to ensure that federal agencies implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation with an emphasis on including local participation in federal decision-making. The executive order directs federal agencies to take into account and respect the interests of people with ownership or other legally recognized interested in land and other natural resources. 69 Fed. Reg. 52989 (Aug. 30, 2004).

supplemental EIS. Any effort to correct these inadequacies would require the Corps to address a series of major issues on which the DEIS is completely silent. That in turn could not be done without issuing a supplemental DEIS and allowing another round of public comment. Otherwise, the right of the public to comment on the basic issues that will influence the Corps' decision would be violated. If the Corps intends to move forward with its section 10 permit, a supplemental DEIS is the only legally sustainable course.

Of course, a supplemental DEIS would not be necessary if the Corps chose to reject the permit outright, given the impacts on federal property interests and the lack of project benefits. The purported air pollution, global warming, and other benefits of the project are so fundamentally overstated that they cannot justify the project, given the other significant adverse environmental, social, and economic impacts. The discussion begins below with a summary of APNS's analysis of the purported impacts of the project on air quality, followed by a summary of the energy needs of the region. APNS begins with these two factors, because of CWA's heavy reliance on them for justifying the project. Further, because of the critical importance of the air quality impacts, Section IV is focuses exclusively on this issue. Each of other factors is addressed separately below.

B. A Factor-by-Factor Analysis of the Proposed Project Indicates that the Project Is Not in the Public Interest.

1. Air Quality Impacts.

The DEIS claims that the proposed project will significantly reduce emissions of both conventional air pollutants and global warming gases by replacing power generated by fossil fuel fired plants. In fact, constructing the project would not result in any meaningful reductions in air pollutant emissions and seems unlikely to result in any meaningful reduction in emissions of greenhouse gases. Any emission reductions that did result would be far smaller than the DEIS projects.

a. Air pollution.

According to the DEIS itself, sulfur oxides and nitrogen oxides are by far the most damaging power plant emissions. These emissions are regulated by "cap and trade" programs that limit total emissions over broad areas to a specific "not to exceed" amount. Constructing the proposed project will not change that amount and therefore will not change overall emissions. Instead, it will allow some other power plant to control its emissions slightly less than would be required if the project were not constructed. The DEIS completely ignores this fundamental regulatory point.

Even if the incorrect conclusion that the proposed project would reduce air pollution emissions by "backing out" emissions from fossil fuel fired plants were to be indulged, the benefits claimed are too high by at least a factor of ten. The DEIS exaggerates the amount of power that the project will generate, and vastly exaggerates the emissions rates for the fossil power that the project would replace.

b. Global warming.

Constructing the proposed project probably would not reduce emissions of greenhouse gases. Massachusetts has adopted a "renewable portfolio standard" (RPS) that requires power companies to buy a percentage of their power from qualified "new renewable sources," which receive renewable certificates based upon their generation. The DEIS assumes that the proposed project would qualify as a "new renewable source" and receive certificates for their generation. But the percentage requirement puts a limit on the number of certificates. Accordingly, if the project were to go forward and get certificates, the certificates generally would not go to some other project (or projects). That other project, in consequence, would become uneconomic and would be cancelled. Put another way, in this case the amount of renewable generation—and thus the greenhouse gas reductions—would be the same regardless of whether or not the proposed project were constructed. The DEIS, once again, does not analyze this fundamental issue.

The proposed project would not provide cost-effective carbon reductions or encourage innovation in new carbon-free approaches to electricity generation. Even if the impact of the RPS were ignored, the proposed project would cause negligibly small reductions in carbon dioxide emissions at a cost far exceeding the cost of alternative approaches. It would be far more sensible to pursue carbon control through a comprehensive mechanism such as the regional cap and trade system now being developed in the Northeast than by constructing the proposed project.

c. Overall perspective.

The proposed project would not be economical without $382 million worth of public subsidies. By any reasonable measure, these subsidies far exceed the value of the air pollution and global warming benefits they would purchase. Since those benefits have already been "bought and paid for," they should not receive any additional weight in the Corps' public interest determination. In particular, to set these benefits off against the harms of the project to fisheries, wildlife, the scenic value of Nantucket Sound, and many other factors, so as to reduce the weight given these uncompensated harms, would represent unjustifiable double counting.

2. Public Interest Factor "Energy Needs."

APNS strongly supports renewable energy projects and agrees with the goal of bringing such projects on-line, when they are properly sited and the environmental effects have been addressed. Such is not the case here. Because the region has no immediate or near-future need for addition energy, this public interest factor is, at best, a nominal positive.

Contrary to the conclusions drawn in the DEIS, the proposed project is simply not required to meet reasonably foreseeable regional energy needs. The DEIS attempts to establish the need for the proposed project in the no-action/permit denial alternative section of the DEIS. In Section 3.3, the Corps opines that in the absence of the proposed project, a number of things would occur:

> Electricity demand will continue to increase, and is projected to grow by 1.9% annually through 2025 (see Appendix 2.0A), or approximately 46% over the 20 year projected life of the proposed Project. In the absence of extreme energy conservation measures, this ever-increasing demand for electricity will need to be met through increased supply, regardless of the development or denial of the Project. Meeting this increased demand with new or refurbished generation supply is likely to be further impacted by the retirement of the region's older fossil-fueled power plants (see Appendix 5.16-B).

DEIS, at Sec. 3.

This analysis, which was obviously designed to justify the proposed project, is highly problematic. First, the 1.9% annual growth rate in electrical demand, which was derived from a DOE report on the future of natural gas supplies in New England, is actually the growth rate *for the United States*, not for New England. Based on the most recent 2004 CELT report published by NEPOOL, the growth rate of demand in New England is projected to be only 1.3% over the ten-year analysis period of the CELT report.

The DEIS additionally relies on an outdated report written by LaCapra Associates in 2002 that includes an analysis of the need for power in the New England region. LaCapra based its analysis on the NEPOOL CELT report issued by NEPOOL in the spring of 2002. Since that time, NEPOOL has published two more CELT reports. Furthermore, LaCapra apparently made adjustments to the Available Generating Capacity included in the 2002 NEPOOL CELT report based on its own judgment of unit retirement schedules, but failed to document the underlying

assumptions used to make these judgments or to reference any outside sources to support the retirement assumptions it uses. In fact, these assumptions are questionable. By prematurely retiring these units in their analysis, it appears that LaCapra has created an artificial need for power in 2008. The Corps has apparently not attempted to obtain updated information by obtaining more recent reports, nor had the results of the LaCapra analysis verified by an independent third party.

Using the most recent NEPOOL CELT report issued in April 2004 and LaCapra's own criterion of 15% as the minimum reserve margin requirement before any additional generation is needed in New England, the next incremental MW of capacity is not needed until 2013. See Figure 2.

FIGURE 2: NEPOOL CELT REPORT – APRIL 2004 (SUMMER ANALYSIS)

NEPOOL	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Unadjusted Load Forecast	27,279	27,893	28,207	28,510	28,818	29,136	29,452	29,799	30,124	30,454
(based on 50% probability)	1,534	1,578	1,627	1,685	1,724	1,737	1,730	1,620	1,565	1,565
Demand Side Management*	10	10	10	10	9	9	9	9	9	9
(netted from load)										
Adjusted Load Forecast	25,735	26,305	26,570	26,815	27,085	27,390	27,713	28,170	28,550	28,880
Total Capacity	31,752	31,958	31,995	33,150	33,150	33,150	33,143	33,143	33,143	33,143
Adjusted Load Forecast	25,735	26,305	26,570	26,815	27,085	27,390	27,713	28,170	28,550	28,880
Installed Reserves (MW)	6,017	5,653	5,425	6,335	6,065	5,760	5,430	4,973	4,593	4,263
Installed Reserves Margins (%)	**23.4%**	**21.5%**	**20.4%**	**23.6%**	**22.4%**	**21.0%**	**19.5%**	**17.7%**	**16.1%**	**14.8%**
*** Funding for DSM programs fall off beginning in 2010, therefore CELFT report assumes less impact of DSM**										

In addition, it should be noted that NEPOOL's 2004 CELT report discounts the impact of Demand Side Management ("DSM") beyond the year 2010, as funding sources for DSM are being phased out after that time and the benefits of DSM are assumed to decline. Contrary to that assumption, it is highly likely that funding of DSM programs will continue beyond 2010; thus, the need for power would be extended beyond 2013.

Using NEPOOL's 2004 CELT report data and applying LaCapra 15% reserve margin, there will be no regional need for power until well into the next decade. With added emphasis on DSM, this need could be extended well beyond the 2015 time frame. Thus, the proposed project will have no impact whatsoever on the energy needs of the region for the foreseeable future.

Further, all of the New England load growth anticipated between now and 2013 can be managed through cost effective DSM programs. According to a report commissioned by the Northeast Energy Efficiency Partnerships, Inc.,[12]

- "By 2013 an energy savings of 24,375 gWh and demand savings of 8,383 MW..." can be achieved through a sustained campaign of energy efficiency programs.

- "If New England can capture only 48 percent of the energy efficiency potential, or 16,500 gWh, then it is possible to offset...," all of the projected load growth between now and 2013.

- "Energy efficiency is 67% cheaper than the average cost to supply electricity."

In light of the regional need for additional power, and the value of cost-effective DSM management, there is no justification for the proposed plant on the basis of energy needs. To the extent that any additional power is treated, *per se*, as a benefit, that benefit is vastly outweighed by the tremendous impacts associated with the proposed project.

3. Public Interest Factor "Conservation."

Though the Corps provides no guidance as to the meaning of this factor, it should not be duplicative of other factors. Thus, even though numerous *negative* conservation impacts will occur for factors such as fish and wildlife, land use, historic properties, and others, APNS addresses those issues separately.

Nonetheless, it is clear that a very strong negative finding on the conservation factor is required by one of the most clear and compelling attributes of Nantucket Sound – its status as a sanctuary under Massachusetts law; its status as a federal MPA under Executive Order 13158; and its qualifications for National Marine Sanctuary status. These features of the Sound are discussed in detail elsewhere in these comments, and they are summarized in recent reports from the Center for Coastal Studies. Exs. 8, 9. Indeed, under Massachusetts law, the very features of Nantucket Sound that would be *destroyed* by the CWA energy plant are specifically protected (*e.g.*, the scenery of the Sound and its overall ecology). M.G.L. c. 132A, § 14 *et seq.*

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[12] *Economically Achievable Energy Efficiency Potential in New England,* by Optimal Energy. Prepared for Northeast Energy Efficiency Partnerships, Inc. (Nov. 17, 2004).

The value and importance of conservation in this area is not adequately addressed in the DEIS. The situation is eloquently stated in *Becoming Cape Cod: Creating a Seaside Resort*: "The sustaining physical and psychic properties of the Cape are founded on the region's sense of authenticity, a connectedness to nature and history that many other vacation places lack. Cape Cod, and New England in general, like to sell themselves as 'real,' as not-Disney." *J.C. O'Connell, Becoming Cape Cod: Creating a Seaside Resort* 135 (2003). [O'Connell, J.C. 2003. Becoming Cape Cod: Creating a Seaside Resort. Lebanon, NH: University Press of New England at 135.] "[I]n the final analysis, a place's authenticity is not utilitarian but grounded in the connection between the physical setting and people's emotional response to it. That is why the future of Cape Cod's development and its sense of place is such an important issue." *Id.* at 136.

Clearly, promoting and "conserving" these remarkable values of the Sound is a public interest value. The CWA project will eliminate all these values, and the conservation ideals they represent. The permit application therefore fails, in a resounding way, under the conservation factor of 33 C.F.R. § 320.4.

4. Public Interest Factor "Economics."[13]

The Corps' economic analysis of the proposed project rests on several powerful assumptions that prove unreasonable. The DEIS misrepresents some important factors that determine the economic impacts of the proposed project and disregards other important factors. The errors in the economic analysis in the DEIS fall into four categories:

First, the DEIS does not account for all of the direct costs of the proposed project. The DEIS does not factor in the loss of revenue for the use and occupation of public lands and waters, and it overlooks evidence indicating that the costs for major repairs and decommissioning exceeds estimates included in the DEIS.

Second, the DEIS does not consider evidence indicating that the proposed project's benefits would be much smaller than claimed. The DEIS assumes that the project would produce economic benefits as the electricity generated by the wind turbines would displace an equal amount of electricity that otherwise would be generated from burning fossil fuels. This displacement would produce cost-savings

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[13] Much of the study of economics is contained in Niemi, E., ECONorthwest, *Deficiencies in the Corps' Economic Analysis of the Cape Wind Project: Comments on the Draft EIS/EIR* (February 2005) attached to Volume 2, and in the BHI study analysis issues in 2004.

for electricity consumers and human-health benefits for people that otherwise would be exposed to pollutants from fossil-fuel-burning generators.

The DEIS, however, disregards evidence indicating that the proposed project will likely produce less electricity than estimated and that any electricity it produces probably would not displace electricity derived from fossil fuels, but rather electricity derived from other renewable sources of energy: biomass, landfill gas, or wind resources elsewhere. Consequently, the cost-savings for consumers and the human-health benefits would be far less than estimated and could, in fact, approach zero.

The Corps also assumed that the proposed project would have only positive impacts on the region's jobs, incomes, and tax revenues. The Corps, however, overlooked evidence indicating that the project's negative impacts on the recreation/tourism industry would offset any of its positive, regional impacts. Moreover, it did not consider the likelihood that the jobs, incomes, and tax revenues generated by the propose project would come at the expense of those that otherwise would be generated by other renewable-energy projects elsewhere in the region.

Third, the DEIS does not consider evidence indicating that the project would impose costs on others, including:

- The tourism/recreation industry. The proposed project is likely to have significant, negative impacts on the value of recreational activities and on the area's tourism industry, with tourists perhaps reducing annual spending by $57 - $123 million. The DEIS tries to compare apples to oranges. The studies it uses are based on projects having many fewer and much smaller turbines, have significant methodological problems with the study, and look at only upland sites.

- The fishing industry. Evidence submitted by boat captains indicates that the 130 turbines, located in an area where currents are strong, would pose a significant hazard and cause the industry to avoid the area altogether or incur additional costs and risks to those fishing among the turbines.

- Property owners. To conclude that the proposed project would not negatively impact the value of nearby properties, the DEIS relies on studies that employ unreliable methods and data from wind projects elsewhere, in areas where scenic views contribute little, if anything to property values. That evidence has little, if any, applicability to this setting. A

broader review of all the relevant evidence indicates the project probably would lower property values, both directly, by degrading the scenic amenities of properties with views of Nantucket Sound, and indirectly, by depressing the area's recreation/tourism industry.

- The ecosystem's intrinsic value. The DEIS fails to analyze the project's potential, negative effect on people who place an economic value on the undeveloped character of the Nantucket Sound ecosystem.

- State, local, and private investments in the ecosystem. The proposed project will potentially undermine efforts to protect and restore the Nantucket Sound ecosystem, including several decade's worth of effort to prohibit industrial development through state and local regulations restricting development elsewhere in the ecosystem, and by expenditures to protect the ecosystem from degradation.

Fourth, the DEIS does not consider economic risks associated with the proposed project. To provide a full assessment of risks associated with the project, the DEIS must consider:

- Financial risks. Although the Peer Review Committee noted that the worst-case scenario would be for the proponent to go bankrupt and abandon 130 derelict turbines at sea, the DEIS does not address this possibility. The DEIS should have considered the proponent's lack of relevant experience; uncertainty regarding the availability of subsidies in the future; potential technological failure; and potential accidents.

- Ecological risks. The Peer Review Committee also warned that the proposed project could cause: large numbers of bird deaths; destruction or disruption of habitat; impacts of noise on fish and mammals; impacts on fish larvae; disturbances to the seabed; and collisions with boats or ships. Extensive ecological damage resulting from the project—an oil spill, for example—could have enormous economic costs, none of which is addressed in the DEIS.

- Navigation risks. The DEIS assumes that the project would not negatively impact boat and ship traffic, because nothing

> would ever go wrong: all boats and ships intending to remain clear of the area would do so, and no boat or ship in the area would experience mechanical failure or navigational error. Alternative evidence indicates that the installation of 130 turbines in Nantucket Sound would increase the number and severity of wrecks and/or cause regulators to impose restrictions on boat and ship traffic in the area.

Correcting all the errors in the DEIS would markedly alter the economic portrait of the project. Instead of highlighting hypothetical benefits associated with displacing electricity from fossil fuels, minimizing the costs, and painting over things that could go wrong, the corrected portrait would show minimal impact, if any, on the region's consumption of fossil fuels, minor reductions in air pollution, degradation of an ecological asset that plays a key role in the area's economy, substantial costs imposed on many different groups, and significant economic risks for everyone involved. The costs and risks of the project almost certainly outweigh the potential benefits, supporting a conclusion that permitting the project would not serve the public interest.

5. Public Interest Factor "Aesthetics."

This factor is a very strong negative for the proposed power plant. The beauty of the Nantucket Sound region is one of its fundamental characteristics, and perhaps the single most important reason Cape Cod and the Islands are a destination for so many. The survey for the Massachusetts outdoor recreation plan found that the *primary* reason for being satisfied with a recreation area is its "attractiveness."

The DEIS (and, hence, the Corps' public interst review) fails to consider aesthetics adequately because of two inappropriate decisions. First, it limits itself to impacts from (or to) historic properties. There is no basis in the regulations for such limitation. In the context of the culture and economy of Cape Cod and the Islands, aesthetics is clearly a much larger concern than can be represented by historic properties. Second, the DEIS substitutes the word "visual" (i.e., visible) for "aesthetics" (i.e., judgments concerning beauty) and describes the visual effects primarily by creating photographic quality visual simulation from selected views. Although well-developed techniques and procedures exist to evaluate aesthetic impacts, *see* Smardon et al. 1984; Smardon, et al. 1988; USDA 1996, the Corps failed to use such techniques. This failure is conspicuous, since the U.S. Army Corps of Engineers' (2000) own *Planning Guidance Notebook* requires the use of such a process and specifically recommends the use of Smardon, et al. (1988).

Because of these failures, the consideration of aesthetic concerns in the DEIS is inadequate. The following list provides only a few examples of the failure of the DEIS to consider critical information:

- The DEIS fails to consider impacts from the project to aesthetic and recreation experiences at non-historic sites. This failure is particularly troubling for two critical resources that have special scenic protection: the Waquoit Bay Area of Critical Environmental Concern and the Monomoy National Wilderness Area.

- In the area of "aesthetic factors," a simple characterization as "temporary or permanent, and determined both individually and cumulatively to have no effect, no adverse effect or an adverse effect" is inadequate because it gives no indication of the cause or magnitude of the several components that contribute to such a decision. An aesthetics assessment procedure must be used that documents the results at each stage.

- In the field of visual aesthetics analysis, "potential views" includes viewpoints that would have a view if only topography were concerned, without the screening effect of vegetation and other elements that could be removed by human or natural causes. The DEIS fails to consider potential views.

- The cultural resources of Cape Cod and the Islands are not limited to historic properties, which is all the DEIS addresses. Although the DEIS recognizes in passing throughout the document that Cape Cod and the Islands are dominated by a maritime culture that supports tourism and other actives, it fails to describe this culture and its characteristics.

A comprehensive study of aesthetic impacts is warranted because the aesthetic experience is one of the foundations of the culture and tourist economy of Cape Cod and the Islands. A detrimental impact to this foundation could have devastating effects on the public's needs and welfare. Even without completing such an analysis, however, it is clear that the industrialization of the Sound will have profound negative impacts on the aesthetics of the region. No party disputes the strong negative effects of the proposed project on this public interest factor.

6. Public Interest Factor "Wetlands."[14]

The CWA wind-energy plant will have negative effects on wetlands. The project will affect coastal wetlands through work associated with cable installation and offshore wetlands through the construction, monopole emplacement, and supporting/protective structures. Proper precautions are necessary to mitigate impacts associated with the proposed project.

The DEIS does not address the serious impacts to waters of the United States from discharges that are regulated under section 404 of the Clean Water Act. Section 404 applies to both the cables and to portions of the project that are within the three-mile limit of the territorial seas. The installation of the cable using jet plow technology creates a discharge of dredged material because it relocates or disturbs significant amounts of sand. In addition, the DEIS does not consider the potential for sediments to be resuspended by anchor line sweep. The anchor lines are predicted to scrape the bottom to a depth of 6 inches, probably repetitiously, a process that will propel sediments into the water column. No analysis has been done to estimate how much and how far these resuspended sediments may be carried under conditions prevailing at the site.

There also are 404 jurisdictional impacts associated with the use of erosion mats (or rip-rap if the mats are not effective) around the monopoles. A number of these structures will be in 404 jurisdictional waters as a result of the expanded state boundaries. These mats are designed to trap sand and will result in alteration of the sea bottom configuration, as well as impacts to benthic species covered by the mats. CWA has not applied for a 404 permit for this purpose; therefore this would be an illegal fill activity, in violation of section 404, constituting a significant adverse, unpermitted environmental impact. The same adverse impact will occur in association with the other monopoles beyond state waters, although they would not be in jurisdictional waters.

An added negative effect for the jurisdictional areas under section 404 is the fact that, under the 404(b)(1) guidelines, these non-water dependent structures should not be located in these waters at all, given the ready availability of onshore sites. Because both the project and cables are regulated under section 404, they must be evaluated against the Clean Water Act's section 404(b)(1) Guidelines. Under the Guidelines, the applicant must evaluate opportunities for use of non-aquatic areas and other aquatic sites that would result in less adverse impact on the aquatic ecosystem.

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[14] For purposes of this factor, section 404 jurisdictional areas are equated with wetlands.

See 40 C.F.R. § 230.10(a)(1)(i). The DEIS fails to make appropriate factual determinations regarding the potential short and long-term effects of the proposed discharge and fails to consider such other alternatives. Even more importantly, because the proposed discharge is not water dependent, and because it would be located in a special aquatic site, there is a presumption that practicable alternatives to the discharge are available. *Id.* at § 230.10(a)(3). These alternatives have neither been presented by CWA nor evaluated by the Corps.

Under the Corps' section 10 regulations "a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines." 33 C.F.R. § 320.4(a). Thus, the Corps' own RHA regulations require that the section 10 permit be denied under this public interst factor alone.

7. Public Interest Factor "Historic Properties."

The National Historic Preservation Act ("NHPA"), and the regulations of the Advisory Council on Historic Preservation require Federal agencies to consider the effects of their actions on historic properties and to take those effects into account during project planning and implementation. As a Federal agency, the Corps is bound by these obligations, 33 C.F.R. Part 325 and Appendix C.

Although the Corps claims to have met these obligations, the DEIS demonstrates that the proposed project will violate federal historic preservation laws and weigh heavily against the public interest by causing adverse impacts to certain historic properties and failing to consider potential impacts to others.

First, the proposed project will directly and adversely affect two historic properties of exceptional national significance to the United States that have been designated by the Secretary of the Interior as National Historic Landmarks ("NHLs") -- the Nantucket Historic District and the Kennedy Compound. Under section 110f of the NHPA, the Corps must minimize harm to both these properties to the maximum extent possible. In this case, the only way to meet this obligation is to mandate that the CWA project be constructed outside of Nantucket Sound.

Second, the Corps failure to consider visual effects to numerous historic properties violates section 106 of NHPA. That provision requires Federal agencies to consider visual effects to any property "included in or eligible for inclusion in the National Register." At the request of APNS, a qualified historian has identified at least 23 historic properties not assessed by the Corps, including two properties included on the National Register, one property that has been determined eligible for